

# AIRMAN SCHOLAR

A JOURNAL OF CONTEMPORARY MILITARY THOUGHT

Volume XV

Fall 2010



Man's Flight Through Life Is Sustained By The Power Of His Knowledge

## UNITED STATES AIR FORCE ACADEMY

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## ***From the Editors:***

### **An Exchange of Ideas**

The Fall 2010 edition of the *Airman Scholar Journal* has a new look which we, the editors, hope will draw increased attention to the publication, and the ideas contained therein. The goal of *ASJ* has been, and continues to be, to provide a forum for fresh new ideas about —military thought.” The Department of Military & Strategic Studies at the United States Air Force Academy, which sponsors the journal, is dedicated to the study of the *context, theory, and application of military power*, and to the education of future officers in those areas.

This issue includes some of the ideas of members of the department’s faculty regarding military thought, and educating cadets to generate their own thoughts. The bulk of the issue contains a cross section of recent cadet research. Besides the insights into the topics researched, the articles also offer insights into the issues deemed relevant and important by our future officers, as well as their approach to these issues.

WE SOLICIT YOUR FEEDBACK AND INPUTS. Past issues of *ASJ* have asked for reader comments, but we feel the time is right to redouble our efforts to use the journal to create a forum for ideas in this evolving area of study. We would like to make the journal a place for the true exchange of ideas between those interested in military thought. Please consider sharing your ideas with the community in one of the following ways:

1. Submit an article. While publishing in the *Airman Scholar Journal* does not offer the same academic credit as publishing in a peer reviewed journal, its less formal status does offer the advantage of exchanging ideas with scholars with similar interests at a more exploratory level. Perhaps you are conducting research for a book or a peer reviewed submission and would like to expose a portion of that research to the community for feedback. The *ASJ* provides a

unique opportunity to do so with fewer of the constraints of a peer reviewed journal.

2. Write a letter to the editor. We would like to begin publishing readers’ thoughts and reactions to the ideas presented in the articles. Many of the ideas presented, especially by cadets, are in the early stages of formulation, are new and creative, and/or are far off the beaten path. If you see potential or pitfalls, the authors and other readers would be interested in hearing a different perspective. Constructive inputs from members of the academic and operational community would be very useful as we continue to develop ideas together.

3. Submit a book review. Every year hundreds of books are published. Not only is their value as literature of varying worth, but there is the further question of how useful they are to students of military thought. This is your opportunity to share your insights not only about books that are closely related to military thought, but also about books written in other areas, such as leadership and management, history, economics, etc. that have application to military power and its *context, theory, and application*.

Any feedback, comments, inquires or submissions may be e-mailed to:

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We hope you enjoy this issue of the *Airman Scholar* and look forward to hearing from you soon!

The Editors:

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## AIRMAN SCHOLAR

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The Department's mission statement reflects our systematic approach to the study of military power...its context, theory and application, or —ilitary and strategic studies.” The department is organized as follows: The executive staff provides departmental guidance and resources for cadet and faculty development. The academic divisions (strategic studies, comparative military strategies, operational concepts, and research and learning) develop and deliver courses and supporting programs. Each course and program combines intellectual rigor with operational relevance to achieve our goal of developing professional Air Force officers of character.

The opinions expressed in *Airman Scholar* do not represent any official policies of the Dean of Faculty, US Air Force Academy, US Air Force, or US government. They are presented with the sole purpose of stimulating and generating discourse/debate on current military issues, as well as, domestic and international affairs.

*Airman Scholar* is published bi-annually. When submitting potential contributions, we ask that you please adhere to the following guidelines:

1. Full-length articles should be approximately 6,000 words in length, although all submissions will be considered. Book reviews should be of books published in the last 3 years and should be approximately 500-700 words in length. Priority will be given to books of relevance to the field of Military & Strategic Studies, although other related topics will be considered.

2. Articles should be in the current MS-WORD format, Times New Roman, 12-pt font.
3. Articles, as well as, book reviews will be edited, as necessary, to conform to *Airman Scholar's* format; proofs will not be sent to authors prior to publication.
4. Articles are encouraged from all knowledgeable members of the academic and military communities. Publication of outstanding papers by USAFA cadets and other service academies is a particular goal of *Airman Scholar*.

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## How Can The Department Of Defense Promote Its Own Energy Independence?

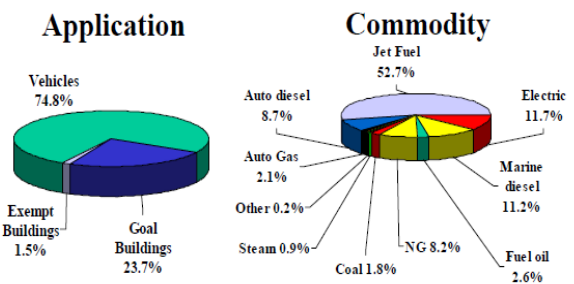
By Cadet 1<sup>st</sup> Class M. Tyler Haugseth

Green. Everywhere companies are advertising green investment, green consumption, recycling, and conservation. Recently, [at] the Air Force Academy, I received a memorandum on the "Falcon Green Initiative" intent on decreasing energy use by the base through conservation while implementing new energy projects such as the construction of a solar farm to supply electricity to the power grid. The initiative sought grass root efforts to reduce consumption such as turning computers off at night, unplugging "vampire" power devices and installing motion detectors to turn off lights in empty rooms. For many, green is a fad. To those who are serious about a "green revolution," different motivations for adopting green principles include maximizing profit, lowering operating costs, conserving resources, or reducing pollution. For the military, every one of these reasons is significant. Reducing waste is one consideration, but reducing the need for a hydrocarbon fuel, especially oil, is not just environmentally friendly, but life saving. Petro-dollars may mean the difference between war and peace. Climate change is a destabilizing force. While private industry can still pay the premium for consuming imported oil and rely on liquid hydrocarbon fuel, energy consumption in the military is a deadly endeavor. As Admiral Nathman said, our reliance on imported oil "weakens international leverage, jeopardizes foreign policy, exacts a huge price tag in money and lives, entangles the U.S. with hostile regimes, and undermines economic stability." The solution to this problem lies in the Renewable Energy Triangle developed by the Navy including: energy

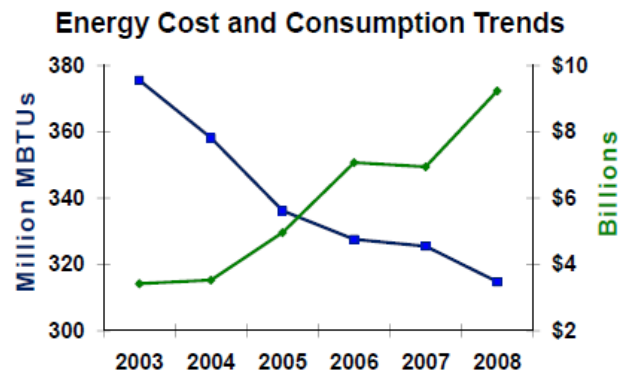
security, economics, and environmental sustainability (Tindal).

### Energy Consumption

The United States is the single largest user of energy in the world. It contains five percent of the population, yet accounts for 26 percent of world energy consumption (Lengyel 7). Within the U.S., the Department of Defense is the single greatest consumer of energy on the order of \$13.2 billion in 2006 (0.8% of U.S. energy consumption) (DoD facilities). Below are two graphs from the DoD facilities presentation which show the allocation of energy by application and commodity.

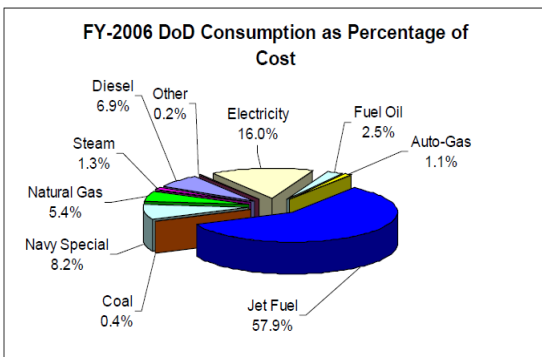


However, these statistics are only for one year, 2006. Anyone who drives regularly knows that the price of gasoline, and consequently oil, is quite volatile. The graph below (McGhee) demonstrates how even a decrease in fuel consumption of 16 percent by the Air Force from 2003 to 2008 still led to a nearly 250 percent increase in energy costs over the same period.





The lesson from this trend indicates that simply reducing consumption through efficiency or decreased operations is not enough to offset the costs of using petroleum-based fuels. Since the U.S. cannot control the oil supply except, perhaps, by military force, it is subject to the variability of the petroleum market. The enormity of this problem lies in the graph below from Lengyel.



In 2006, the DoD consumed 4.6 billion gallons of fuel, ~~or~~ an average of 12.6 million gallons of fuel per day” (Lengyel 10). The problem is most evident in the 57.9 percent of consumption by cost in jet fuel. For the foreseeable future, the only fuel that will be used by aircraft in the DoD will be hydrocarbon based. Currently, nearly all of that is supplied by oil. The Quadrennial Defense Review published in February of this year states that ~~by~~ 2016, the Air Force will be postured to cost competitively acquire 50 percent of its domestic aviation fuel via an alternative fuel blend that is greener than conventional petroleum fuel.” According to McGhee, by mid-2011, all USAF aircraft will be certified to use an approved alternative blend consisting of petroleum-based fuels combined with hydrocarbons extracted from non-food seed oils in the short term and halophytic (algae-based) and cellulosic fuels in the long term. Though the prospect for wide-spread use of non-hydrocarbon-based fuels in USAF aircraft by the middle of the

century is dim, the ability to acquire fuel from domestic sources like algae and cellulose make their supply more reliable.

Consider a scenario that could cripple U.S. war fighting capability right now. An Israeli strike is conducted against Iranian nuclear facilities in late 2010. Iran decides that it wants to cripple all U.S. operations and the American economy for their support of Israel. In 2011 it launches a major offensive. It mines the Strait of Hormuz, effectively blocking all tanker access. It destroys major oil production facilities and tanker docks in Saudi Arabia and other Persian Gulf states using its long-range ballistic missiles. It backs a domestic Nigerian terror group and provides them weapons which were successful in paralyzing oil exports from the Niger river delta. It garners an agreement with Hugo Chavez of Venezuela who immediately suspends all tanker transports of oil out of his country in exchange for financial support from Iran. Iran also launches its Shahab ballistic missiles at Russian pipelines in the region. Within one week it has cut 30% of the world’s oil supply off from the U.S. and Europe. U.S. forces in Iraq and Afghanistan must rely only on their fuel reserves stored prior to the attack and can only obtain limited fuel supplies airlifted from the U.S. The price of oil skyrockets and effectively cripples the world economy. While the retaliatory blow against Iran is devastating, they have achieved their goal of crippling further U.S. military action in the Middle East while the president must concentrate on damage control at home by opening the strategic reserve. Facing major political pressure, he removes forces from the Middle East in order to conserve fuel for domestic use. Not only will the U.S. enter the greatest economic depression in nearly a century, but its ability to project power abroad is effectively neutralized.

Anyone capable of disrupting oil supplies will be able to paralyze American military forces unless they are able to obtain energy supplies domestically or utilize energy supplies which will not compete with the rest of the U.S. economy.

### **Cost of Defending the Oil Order**

No good business relies on the honesty of men and women to provide for their interests. Likewise, the United States does not rely on the good will of leaders in the Middle East, Africa, Asia, or our neighbors to the north and south in Canada or Mexico to provide a reliable flow of energy supplies. With the rise of Chinese energy consumption, the prospects of a rising India, and the expected oil production peak in site, access to oil is not a right guaranteed to the United States. Access to affordable energy propelled the United States to its current superpower status. From wood in the new world, to coal, and now oil, readily available energy supplies propelled the enormous growth of American industry. Continued access to affordable energy is a necessity, not an option, to maintain the current standard of living in America. As such, the people of the United States expect the Federal government to protect their access to energy in order to continue to prosper. Thus, through the DoD, the government has deployed assets directly and indirectly in order to protect the flow of oil. While all the data are difficult to compile, some estimates of the direct costs are available. Indirect costs will not be accounted, but the sources of these costs will be mentioned.

In the late 1970's, President Carter stated that the "protection of the Persian Gulf [is] a formal element of U.S. defense strategy" (O'Hanlon 59). Though protecting oil supplies was vital to the government, it

was not until the 1970s with the oil embargos and the increasing reliance of the U.S. on imported oil that it became an official position of the Federal government. As such, the primary focus of this effort is the Middle East with its share of the oil horde. According to O'Hanlon, "quasi-permanent facilities" in the Middle East to include Central Command headquarters, various bases in the region, and thousands of military personnel account for \$5-10 billion a year, or 1-2% of the defense budget. However, much of the manpower and forces used in defense of the region are not permanent forces and are deployed in regular intervals or constitute deployed readiness in the form of carrier battle groups and other naval forces. Again, O'Hanlon places an estimate of annual costs not including those of the current operations (OIF and OEF) at about \$50 billion a year. Without the \$100 billion dollars a year currently allocated to the Iraq war, and considering an annual import of 1 billion barrels of oil from the Middle East per year to the U.S., that amounts to a \$50 per barrel subsidy to protect oil resources from the Middle East or around 50 cents per gallon of gasoline "assuming half of the oil goes towards gasoline." This is in line with other estimates quoted by the author (O'Hanlon 60).

An illuminating statistical method cited by O'Hanlon was developed by Kaufmann. The Kaufmann analysis attempted to break down the defense budget by regional costs in 1992. While the analysis has not been performed since 1992, O'Hanlon roughly uses it to estimate current costs. The Kaufmann method found that approximately 20% of the defense budget was dedicated to the defense of the Persian Gulf. Using that percentage today, the costs approach \$100 billion a year (70). Though O'Hanlon only uses Kaufmann's estimate of Persian Gulf costs, I would consider two

other numbers in the Kaufmann analysis important. Though surely the costs associated with regions like Southeast Asia, the Mediterranean, Africa, and the Caribbean would include those to secure oil supplied from places like Indonesia, Russia, Nigeria, and Venezuela. However, the quotes of 7% and 5%, respectively, for the Atlantic and Pacific sea lane defense must be included in the estimate (68). These include the protection of all shipping, but a sizable portion of these ratios account for the protection of oil tankers considering that ~~two-thirds~~ of the world's oil trade (crude and refined) is moved by tankers and 25 percent of international natural gas trade is in the form of liquid natural gas" (Shaffer 95). Even assuming a low estimate of 1% from each ratio for sea lane defense, this would mean an additional \$10 billion a year is necessary to secure oil shipments via the sea lanes.

O'Hanlon's bottom line using Kaufmann and his own estimates indicates the potential to save up to \$50 billion a year (+/- \$25 billion a year) in the budget if the Persian Gulf was ~~removed~~ from the list of overseas commitments" (70). If sea lane defense was also removed from the list of commitments, I would estimate another \$5-7 billion could be saved per year. These numbers do not take into consideration the costs associated with peacekeeping in Africa, operations involving Southeast Asian production, Northern European output, or Canadian supplies. Surely forces in places like Europe or funds allocated to Northern Command/NORAD have some impact upon oil supplies. When direct estimates are tallied, a range between \$25 billion and \$83 billion is found for the defense of oil supplies. For the sake of argument, let's see how far this money could be used to produce renewable electricity in the U.S.

If an AP1000 nuclear reactor built by Westinghouse is capable of producing 1,117 MW and operates continuously 24/7 to produce electricity, it can produce 9,784,920 MWh of electricity a year. The United States uses 4.11 billion MWh of electricity a year. Of that, 70.7 percent is generated by non-renewable sources (coal, natural gas, oil). A recent subsidy to build two AP1000 reactors in the U.S. guaranteed by President Obama was \$8 billion dollars. With this rough data, it would require about 420 AP1000 reactors to replace all current non-renewable electrical generation with AP1000 nuclear reactors. At \$4 billion apiece, this would require \$1,680 billion to achieve. If we use the above range of \$25 billion to \$83 billion saved a year, this would require between 20 and 67 years to replace all *current* non-renewable electrical generation in the U.S. This, of course, assumes no one else would build electrical plants, that no growth in electrical demand will occur, a decrease in electrical demand per capita could occur, nor does it account for fuel used in transportation which accounts for about 28 percent of U.S. energy consumption. However, the prospect that the U.S. could eliminate all fossil fuel use in electrical generation in as little as 20 years using the money saved from protecting the oil supply from the Persian Gulf is astounding.

The DoD is not in a position to redesign the country's electrical grid nor decide if protecting Persian Gulf oil is a favorable policy. However, it can change its own policies and operations procedures to pursue the marching orders given by the civilian leadership while improving the military's overall security posture. The temporal hierarchy, I believe, that must be followed to achieve greater energy independence follows: improve efficiency to reduce oil demand, develop and utilize non-



food crop biofuels grown domestically for hydrocarbon fuel, initiate procurement measures which emphasize fuel efficiency and utilize fuels which are environmentally friendly as well as sustainable, and begin procurement of energy resources for all bases which are self-contained and controlled by the base as well as carbon free (nuclear, solar, wind). —Energy efficiency can serve as a force multiplier because it increases the range and endurance of forces in the field and can reduce the number of combat forces diverted to protect energy supply lines, which are vulnerable to both asymmetric and conventional attacks and disruptions” (QDR 87).

### Energy in Theater

The United States has the strongest military in the history of mankind in relation to her neighbors. At the same time, it is the most energy intensive military in the world. In order to maintain its dominance and war-fighting capabilities, it requires enormous amounts of energy to sustain operations. For example, —an Army heavy division may use about 600,000 gallons per day...Energy is the key enabler of U.S. military combat power.” This requires reliable access to fuel and electricity. Forward operating bases require fuel convoys to deliver the energy necessary to continue operations and bases outside the warzone acquire electricity from the civilian power grid (Lengyl 7-11, Nathman).

First, the cost of this fuel is prohibitive. According to Nathman, —one gallon of diesel fuel from Kuwait at \$1.30-\$1.40 costs \$190 to ship to Afghanistan. Considering that over 87 million gallons of fuel were transported in Afghanistan in 2007, this accounts to a huge sum (Iraq required over 502 million gallons of fuel in 2007) (Casualties). Reducing use of fuel in

Afghanistan by only 1% would save \$1.6 *billion* a year assuming \$190 per gallon of fuel.

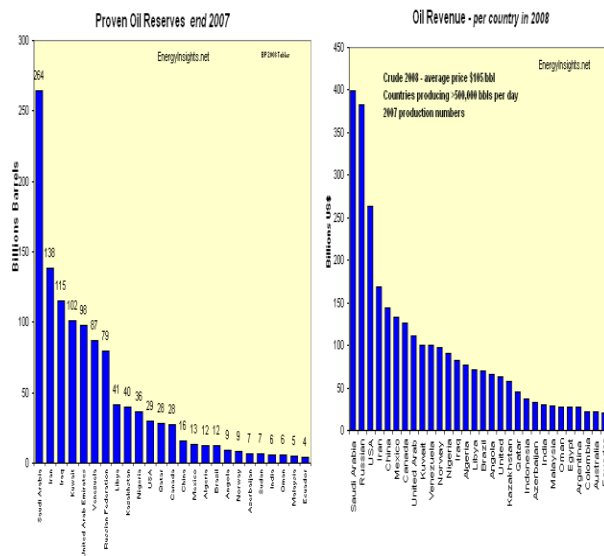
Second, the human costs of fuel are undeniable. The Army performed a study on fuel and water use in theater related to convoys and casualties. They found that 50% of convoys are dedicated to theater fuel transportation. In their study, they found that there were —0.042 casualties for every fuel-related resupply convoy” or one casualty per 24 convoys. With 6,030 convoys in 2007 alone (Casualties), that amounted to 251 casualties. As of August 2008, both operations had 4,683 casualties combined, 3,708 to hostile fire (Powers). Using the above estimate, that means that between 10-20 percent of the casualties up till 2008 were from transporting fuel for combat operations. Considering that the American military will continue to become a more energy intense force, the human and monetary cost (blood and treasure) of using hydrocarbon fuels in war will only increase. To save lives and money, the DoD must find ways of reducing consumption of petroleum based fuels and increase local energy production for forward operating bases. These measures should decrease the need for fuel convoys thereby decreasing the enormous costs of shipping fuel in the theater and preventing casualties related to convoy operations.

### Political War

Some of the top antagonists of the United States include Venezuela and Iran, coincidentally two of the largest oil producers in the world. Yet, our way of life, and subsequent reliance on oil to power that way of life, provide enormous sums of cash to unfriendly regimes. According to Admiral Nathman:

America's energy posture constitutes a serious and urgent threat to national security – militarily, diplomatically, and economically...U.S. dependence on imported oil is a direct threat to national security because it triggers instability all over the world and limits American foreign policy options. Oil revenues allow petro-dictators to stifle freedom in their countries and the inequality of revenue distribution fuels insurgency.

Furthermore, he says the “national security planning processes have not been sufficiently responsive to the security impacts of our current energy posture.” As such, dependence on imported energy has severely limited foreign policy options both directly and indirectly. Below are two graphs illustrating oil revenue and oil reserves by country.



The political implications of these graphs are undeniable. Many countries unfriendly to the U.S. like Venezuela, Iran, and Russia are earning huge sums of money. Countries which are officially allies, like

Saudi Arabia, but who fund organizations which promote extremism abroad maintain enormous reserves which will continue to provide them with strong revenue as long as oil is the reigning order. However, supplier nations are not the only concern; conflict for that supply is becoming as important to American foreign policy.

In 2005, the Chinese oil company (nationally owned), CNOOC, bid to buy the California oil company Unocal was the largest Chinese acquisition offer in history (Klare). Congress called the bid an “outrage” and blocked the offer. Politically, China saw the block as an attempt by the U.S. to prevent it “from acquiring energy on the open market” and that it would have to buy up resources abroad to secure its energy supplies (Garrison 143).

Currently, “China’s push for energy security raises concerns that its mercantilist ‘go forth’ policy potentially disrupts international oil markets and the current energy system,” though China’s motives and power projection are limited by its economic reliance on the U.S., the E.U. and Japan. However, American pressure on China’s energy quest resulted in the opposite effect intended. Americans are calling on China to reduce its energy consumption, yet America’s energy consumption per capita is twice the next highest in Europe and enormous compared to China’s. This pressure empowers Chinese hard liners who advocate increased military posture and confrontation with America (Garrison 143). As such, the United States must be conscious of conflicting interests with China and “as energy becomes scarcer, the two countries will have to carefully manage the relationship to avoid crisis-driven policy responses” (Garrison 151).

Despite America’s and China’s conflict for energy, Garrison makes a strong

point which should be considered in America's foreign policy posture. As the two greatest consumers of energy in the world, China and the U.S. constitute a powerful buying lobby. A trade partnership could provide power over supply through purchasing deals (144). However, this is difficult, regardless of the purchasing power of both nations due to the inelasticity of oil as a commodity and its necessity to economic growth. Therefore, the more likely outcome are the "strategic partnerships" we are seeing today between consumers and producers where the consumer strikes a deal with the producer in exchange for such commodities as arms. This can be seen with the Chinese contracts with Iran for oil. This scenario is worse since China is likely to seek oil where the U.S. has restricted trade (Iran, Myanmar, Libya, etc.). This undermines U.S. policy tools with those countries and increases tensions with nations like China (Klare). In all cases, the best scenario is to lower each nation's energy footprint (Garrison 151).

With constrained production today, Africa will be the next energy frontier "Africa is the final frontier as far as the world's supplies of energy are concerned with global competition for both oil and natural gas" (Klare and Volman). According to Klare and Volman, the discovery of new fields is no longer sufficient to compensate for the declining production in larger, older fields. With the increased focus on African oil, the DoD will be called upon to defend the African energy stage. The Deputy Assistant Secretary of Defense for African Affairs, Michael Westphal, stated in 2002 that "45% of the United States' imported oil supply comes from sub-Saharan Africa....this is also the number which has the potential for increasing significantly in the next decade." Furthermore, his boss, Kansteiner, also said later in 2002, "African

oil is of strategic national interest to us...it will increase and become more important as we go forward." In fact, in 2002-2003, the U.S. provided \$300 million in aid to Angola and Nigeria, the two largest African exporters of oil to the U.S. The U.S. gave Nigeria seven surplus coast guard cutters to the Nigerian navy. In 2003, the supreme commander of NATO, General James Jones said his NATO naval forces would spend less time in the Mediterranean and up to 50% of their time along the West African coast. Finally, in accord with the official statement in 2003 that "a key mission for U.S. forces [in Africa] would be to ensure that Nigeria's oil fields, which in the future could account for as much as 25 percent of all U.S. oil imports, are secure," the DoD is "beginning to establish a basing infrastructure in Africa, again following the trajectory first seen in the Persian Gulf and Caspian regions" (Klare and Volman).

This means we can expect U.S. operations to increase in the near future with the decreasing force requirement in Iraq and Afghanistan. As President Obama achieves his goal of handing over Iraq to the new government while removing troops through 2011, the next focus after Afghanistan will likely involve African policies. The DoD has spent the last decade developing a "lily pad" basing infrastructure in Africa. This approach places an airstrip with a small contingency force in country that provides for the smallest footprint in order to avoid aggravating local tensions while providing the means of massive build-up in the event forces are needed in the region. Furthermore, the strategy involves augmenting the lily pad bases with the U.S. naval armada to secure African oil supplies in the event of major conflict. This is consistent with General Jones' statement that NATO forces will increasingly patrol the western coast of Africa.

These three major points will coalesce into conflicting interests throughout the region. With Persian Gulf production peaking and Chinese consumption increasing, Africa will be a foreign policy priority for the U.S. and China. The preview of this conflict is already apparent in the Chinese stakes in Sudan despite the humanitarian crisis there between the northern and southern regions. The increasing interests in African oil will likely cause irritation with Persian Gulf allies who will see their position diminishing with the United States. In fact, this may have a compounding factor. With less focus on the Persian Gulf and proliferation issues in Iran, major states like Saudi Arabia may be tempted to go nuclear. Also, the smaller states like Bahrain or Qatar, majority Shia nations, rely on the U.S. umbrella. Without that assurance, they may align with Iran, exasperating the problem. The oil issue and the politics behind it are complex as oil affects regional stability, power, freedoms, and relationships more than perhaps any other resource.

### **Climate Change and Future Operations**

Though many critics consider climate change a hoax, the official stance of the DoD, according to the 2010 Quadrennial Defense Review, is that climate change is real and that it “could have significant geopolitical impact around the world” (85). Several factors contribute to the effects which climate change may incur. The prospect of rising sea levels impacts not only the nations whose elevation lies at sea level currently or whose economy relies on coastal commerce, but on military bases located on the coast, especially naval and coast guard bases. The 2008 National Intelligence Council “judged that more than 30 U.S. military institutions were already

facing elevated levels of risk from rising sea levels.” Predications suggest that more extreme weather patterns and the changes in land usability (arable land, desertification, etc.) will lead to decreased stability, “further weakening of fragile governments,” as well as increasing humanitarian needs (QDR 85). Since the U.S. military traditionally is a first responder to humanitarian crises like the Asian tsunami or the Haitian earthquake, more weather based (i.e. hurricane/cyclone/typhoon and flooding incidents) crises will demand a response which the United States will likely be called upon to provide. In nearly all cases, climate change represents a new challenge to DoD operations by increasing instability abroad and impacting the operations of bases most at risk to the consequences of climate change (QDR 85-87).

Therefore, climate change is a significant risk to the DoD and its global operations. In the QDR, the “DoD will work to foster efforts to assess, adapt to, and mitigate the impacts of climate change” (86). Though the DoD cannot curb climate change, it should still invest in measures which will decrease its carbon footprint. In addition, it can help decrease the country’s carbon footprint. “The Environmental Security and Technology Certification Program [will use] military installations as...test [beds] to demonstrate and create a market for innovative energy efficiency and renewable energy technologies coming out of the private sector and DoD and Department of Energy laboratories.” This is already apparent today on many bases such as Nellis AFB, Elmendorf AFB, Davis-Monthan AFB, and Fort Irwin. In fact, four USAF bases are already completely reliant on renewable energy systems including solar, wind, and fuel cells.

Other aspects of climate change will also alter military operations. Increasing polar ice melting will lead to longer ice-free seasons in traditionally closed areas in the northern trade routes. In fact, the melting of Arctic ice may result in the formation of new naval trade routes which will require monitoring. Thus, the military must secure and improve infrastructure of the region to support new commerce (QDR 86). This will require redeployment of assets from other regions to monitor polar transit. With the current emphasis on downsizing of an overstretched force, further responsibilities may overtax the military infrastructure.

Reactions from other nations may also lead to conflicts. With geo-engineering, proposed by many scientists to reverse climate change through global cooling, new political consequences emerge. Melting ice caps also means that the Russian tundra will melt. This tundra can provide new arable land and favorable living conditions for the Russian population. It also makes access to Siberian oil easier for both production and transportation. Arguably, climate change would boost the Russian economy. So, geo-engineering with atmospheric sulfate, algal seeding and cloud seeding would represent a conflict of interest with anyone who stands to profit from climate change. This means that there exists the potential for armed conflict over climate change and geo-engineering. Does anyone have the right to enact geo-engineering on their own to reverse the effects of climate change? Therefore, the best option, currently, is to use passive techniques to curb the current effects by reducing the DoD carbon footprint.

## Recommendations

Several initiatives can begin to reduce reliance on petroleum and other non-

renewable for the military. Another fact to consider, if the military's choice of fuel or power generation competes with the civilian sector, even a reliable supply of domestic fuels will not outweigh the public demand for the fuels in the event of price spikes or global supply shortfalls. For example, even though the U.S. produces enough petroleum alone to fuel the military in its current war, the impact on the civilian economy would be devastating if the military used all the available fuel for the war. This is only an acceptable option in a war for survival, not a proxy war. Therefore, using energy sources which do not compete is ideal. Using sources that do not compete *and* are viable for civilian use would be favorable as a technology demonstrator to lower capital costs related to research. Solar, nuclear, and wind fall under these categories as they are local (solar/wind) or the United States has an extraordinary surplus of fuel (nuclear).

One area of particular interest for military bases is a Small and Modular nuclear power Reactor (SMR). The example which will be used is the Hyperion Power Module (HPM) developed by Hyperion Power Generation. It is a device capable of producing 25 MW of electricity during operation (Hyperion). Dyess Air Force Base, one of four USAF bases to run on 100% renewable energy from electricity, uses 80 million kWh of electricity a year (Denslow). If Dyess AFB used the Hyperion system to provide its electrical needs, the HPM would only need to operate at 36.5% capacity (if running 24/7) to produce this electricity. Nellis AFB, which recently installed 13 MW of solar panels on a 130 acre capped landfill uses 120 million kWh a year (Peters). A HPM would only need to run at 55% capacity to power the entire base, and the module only occupies 1.5x2.5 meters (as compared to 130 acres for only a quarter of necessary production using solar). Any



bases requiring more electricity than one HPM can provide can still use the units when they are teamed” (Hyperion).

Nuclear energy is the pariah of energy sources, conjuring memories of Chernobyl and Three Mile Island for many people. However, the HPM is far different from a conventional reactor. The fuel is only 20% enriched, incapable of fueling a nuclear weapon. The fuel is also self-regulating; it will cease fission if it becomes too hot due to the nature of uranium nitride. The module is buried in the ground and not disturbed for 8-10 years at a time. Thus, it is naturally hardened due to the burial and does not need refueling for up to 10 years, limiting exposure. It produces a volume of waste equivalent to the size of a softball every 10 years (Hyperion). Logistically it is a superior choice. It can be airlifted to any location for use and can begin operation quickly. At a forward operating base, it is not vulnerable to mortar fire or non-bunker busting bombs. It eliminates reliance on civilian grids and on diesel generators in theater. As a power source, it can eliminate thousands of tons of CO<sub>2</sub> emissions a year and saves money when compared to current electrical production (Hyperion).

In the 2010 QDR, the army stated its goal to transform its 70,000 non-tactical vehicles (NTV) to hybrid and electric systems. Currently, they have 500 hybrids and 4,000 low-speed electrical vehicles. Conversion of these NTVs to electrical or (plug-in) hybrid systems would allow for on-site modular nuclear systems to provide the energy for facilities and vehicles while continuing to reduce non-renewable fuel consumption. This would also reduce demand for fuel that can be used for combat systems.

The current fleet of aircraft and main battle tanks rely on JP-8 fuel. Their use will continue for decades to come. Retrofitting these vehicles to utilize non-carbon fuels is cost-prohibitive at best, impossible at worst. However, synthetic JP-8 derived from coal and biofuels grown domestically would ensure a reliable supply of fuel in the event of a major war. Current trends to certify all combat vehicles on syn-fuels is a significant step in a process of full conversion to syn-fuels. While coal-based fuels would not decrease carbon emissions, biofuel based systems would be carbon neutral in practice. All combat vehicles running JP-8 fuel or diesel should be exclusively fueled with these syn-fuels as soon as practical in order to reduce reliance on imported oil.

These three measures combined with new procurement policies to encourage the use of non-carbon based fuels would curb the need for imported oil to power the military establishment. While greater measures should be taken across the American economy to reduce overall exposure to foreign influence relating to oil consumption, the DoD has the capability to accomplish these goals ~~in~~ house.”

## Conclusions

Green is more than a luxury for the military, it is a necessity. Ideally, the entire country should adopt green principles. Only a complete national shift in policy can attenuate the political consequences of oil consumption which currently limits U.S. foreign policy options with nations like Iran or Venezuela. Using carbon-based fuels also requires significant logistical coordination to transport fuel to forward bases. Minimizing this need through efficiency and alternate power generation systems, like nuclear or solar, lessens the human stake and monetary price while improving combat effectiveness.

Furthermore, the DoD can become a role-model for environmental stewardship after decades of environmental destruction. Encouraging the decrease in greenhouse gas emissions may attenuate the coming tides of instability as a result of climate change. Therefore, the DoD should increase efforts to stem petroleum use for military operations or the U.S. stands at the continued mercy of those with the power to shut-off the oil spigot and at the mercy of mother nature.

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## **Nuclear Consequence Management:**

### **How the US Should Respond to a Nuclear Attack by a Non-State Actor**

by Cadet First Class Joel Holley

In the Cold War, a large amount of American policy was directed at the prevention of a nuclear war. The fall of the Soviet Union seemed to make the threat of nuclear war disappear. However, nuclear weapons are still a significant threat to American security. While nuclear war is no longer a significant threat to the West, detonation of a nuclear device in an American or Western city is a very real possibility. In fact, President Obama said in remarks to reporters at a global summit meant to limit nuclear proliferation that terrorist organizations obtaining a nuclear weapon is “the single biggest threat to U.S. security, both short-term, medium-term and long-term.” The prevention of a WMD attack on America is a very significant priority for policy makers.

Despite the significant amount of policy which should be devoted to the prevention of a nuclear attack, some amount of thought should be devoted to consequence management as well. The aim of this paper is to determine the proper course of action the United States of America should take in the event of a nuclear attack by a non state actor. The answer will be approached by looking at historical precedent and current research on the hypothesized effects of nuclear weaponry. The answer is difficult to predict and complex in its application, the US should have a response which is heavy on retaliation as well as reclamation of the affected area.

There is no historical example of a non-state actor using nuclear material as a

weapon. However, there are other historical examples of non-state entities using destructive and creative weaponry, as well as the notable example of the reconstruction of Japan after the Hiroshima and Nagasaki bombings. The four historical examples that will be considered are the US nuclear attack on Japan, the sarin attack in Japan in 1995, the Oklahoma City bombing, and the 9/11 terrorist attacks. Through these examples, the response of the victim state, in retaliation and rehabilitation, will be evaluated.

### **1945: Hiroshima and Nagasaki**

The situation in Japan in 1945 is a unique one. The two atomic bombs devastated the country to the point of unconditional surrender. There would be no retaliation. Instead, the Japanese government would work closely with US and allied powers to rebuild the government. The US would occupy Japan until 1952, and would occupy Okinawa until 1971. A strong alliance between America and Japan would be formed. Currently, there is a strong American military presence in the country, as well as a prosperous and fruitful economic relationship between the two countries.

The most notable aspects of the bombing for our study are the effects the bombs would have on the cities, and the lessons which should be learned from the clean-up. Despite the relative weakness of the bombs compared to today's nuclear weapons, a bomb detonated by a non-state actor could potentially be equivalent in size to the Hiroshima bomb. The first notable failure in the clean-up process was how slowly relief arrived. Evacuations of the city to relief camps and damage to rice fields caused acute food shortages. Housing shortages also caused crises in the region. Even into 1950, demand for housing exceeded availability by 90 times.

While housing and food shortages were significant causes for immediate concern, they were not unlike other more conventional disasters, man-made or otherwise. When reconstruction of the cities took place, it did not take long for health officials to understand that the nuclear explosion was far from conventional. In 1946, President Truman formed the Atomic Bomb Casualty Commission (ABCC). The ABCC studied many of the effects the bomb had on the health of those affected. Major health issues included cancer, leukemia, shortened life-span, loss of vigor, growth and developmental disorders, sterility, genetic alteration, abnormal pigmentation, hair loss, and epidemiological changes.

Radiation is a very unpredictable side effect of nuclear explosions. While the effects of radiation from the bombs in Hiroshima and Nagasaki peaked 3 to 4 weeks after the explosions, their effects still linger. Radiation is not easy to clean, as evidenced by other nuclear incidents (Chernobyl is still ravaged by the effects of the radiation). The ABCC's findings demonstrated the effects of the radiation, but both governments underestimated the process of removing radioactive materials from the site. What the nuclear attacks on Hiroshima and Nagasaki taught us is that nuclear clean-up is a prolonged process, and caution should be exercised throughout. Caution, however, should not be used at the expense of the survivors, as the lack of immediate aid almost proved to be as harmful as the bomb itself.

### **1995: Tokyo Sarin Attack**

In 1995, Japan suffered another attack from a weapon of mass destruction, only this time from a non-state actor. A cult group called Aum Shinrikyo punctured bags of sarin in the Tokyo subway system. The number of deaths caused by the attack was

relatively small, only 12 died, but the city was fully terrorized. Sarin is an extremely potent nerve gas, and hundreds of thousands of Tokyo residents depend on the subway system for travel.

The emergency response in Japan was mixed in terms of success. There were a lot of lessons which can be taken away from the incident. Japanese failures included problem recognition, contingency plans, and lack of bureaucratic communication.

When the sarin was released, Japanese passengers reported bags which were leaking liquid on the trains. This was the initial report of the disaster. The initial response was to send subway workers which cleaned up the spill with newspapers and trash bags. These employees would later die of sarin exposure. It was not until hundreds of passengers reported violent respiratory problems that the emergency response services were called. The first emergency responders were local agencies, including firemen, policemen, and physicians. Here, the vital lesson learned was that unmarked, unattended luggage should not be handled lightly. The lack of awareness by the station personnel resulted in the needless deaths of employees and affected hundreds of passengers which could have been sufficiently warned.

The next lesson was that the civilian sector of Japan had very little training on how to handle a WMD attack. Physicians arriving on the scene had almost no experience or knowledge about nerve agents. Firemen and policemen also had extremely limited experience in dealing with a chemical attack. Even if these immediate response workers had the experience necessary for dealing with a situation like this, the subway station management and the city had no plan set up for any terrorist



attack. The entire city was basically operating on improvisation.

There are many lessons which can be learned from this perspective. The first and foremost is that every city susceptible to a terrorist attack should have a plan to respond to potential terrorist attacks, and should educate their employees about the plan. Since the initial moments after the attack are often the most critical, movements of personnel should be done with maximum effectiveness at this point. Also, emergency personnel such as firemen and policemen should have some training to be able to recognize WMDs. The signatures and telling elements of WMDs should be able to be recalled by emergency personnel, or at least they should have quick access to literature about potential attacks.

The last lesson discussed here is how bureaucratic institutions in Japan failed to work synergistically. The system in Tokyo was set up so that bureaucratic branches were at best isolated, and at worst competitive and confrontational. This proved to make effective clean-up, mitigation of effects, and future prevention slow to be effective.

America has recently set up the Department of Homeland Security. This new and highly budgeted department represents a synthesis of emergency response units. The Department directs emergency resources and provides for a high level bureaucratic focus. In addition to this, local and state governments need to give their agencies a clear focus and make sure they understand the larger picture.

### **1995: Oklahoma City Bombing**

Another large scale terrorist attack that can be looked at for guidance is the Oklahoma City Bombing. Despite this event being a domestic terrorist case, it provided

America with many lessons about international terrorism.

Timothy McVeigh was an American militia movement sympathizer who possessed a strong hatred for the federal government. He timed his attack on the Alfred P. Murrah Federal Building to occur on the 2<sup>nd</sup> anniversary of the Waco siege. Using high grade ammonium fertilizer-based explosives, McVeigh and his accomplice, Terry Nichols, orchestrated what would become the largest terrorist attack on American soil until the 9/11 attacks.

The emergency response to the bombings represented an appropriate civil/military relationship. Despite DoD's vast resources and personnel, military forces are in no position to be the first responders in any situation. This must be left to local and state powers. As was the case in the 1995 Japanese sarin attacks, the Oklahoma City hospitals were overwhelmed with patients immediately following the bombing. The DoD responded appropriately, by making their services available to regional governments as soon as possible. The state will have access to national guard and reserve units, but federal agencies must let disaster relief occur at tactical levels before intervening in investigation processes.

An interesting foreign policy phenomenon occurred in the wake of Oklahoma City. President Clinton not only had to deal with a country in grief, but also with the reactions of foreign states. While it is difficult enough to determine the correct application of American military forces, Clinton was being offered military assistance from many countries, including Israel. In what was perhaps a wise move, Clinton declined foreign military help, which prevented the escalation of any perceived favoritism or implied blame. For

instance, had Clinton accepted Israel's help, he would have sent an implied message to the Islamic world that the West views terrorism as an Islamic tactic, and polarizes the world between the West and Israel vs Islam.

The Oklahoma City Bombing also opened the FBI's and CIA's eyes to preemptive intelligence gathering. Before McVeigh, the FBI viewed extremist and fringe groups as low-threat entities. While neo-Nazi, white supremacist, and anarchist groups produced much extreme, violent, and hateful talk, the FBI never really anticipated that any of them would follow through with their threats. Oklahoma City changed all of that. After the bombing, the FBI uncovered many credible plots to destroy public and federal buildings and resources. Many of these came from groups like the one to which McVeigh belonged.

The American government learned the same lesson here as the Japanese government did in the sarin attacks: never underestimate non-state actors. Resources are becoming more and more available throughout the world, and a team of trained scientists is becoming as dangerous as an army.

### **2001: September 11<sup>th</sup> Attacks**

The 9/11 attacks provide perhaps the best historical precedent we have for a catastrophic terrorist attack on America. The attack was perpetrated by a non-state actor, perhaps operating with assistance from one or many states, on American soil with the intent to inflict as much damage as possible on the general populace. How America responded would define a generation, revamp foreign policy, and change the face of war fighting for the American military.

One thing which characterized the entire rebuilding process, and perhaps

foreign policy process as well, was haste. When the planes hit the towers, emergency personnel were immediately on the scene. Many of the New Yorkers who perished in the towers were in fact firemen rushing to help.

While the clean-up was done very well, one thing which became mired in controversy was the rebuilding of the tower. One World Trade Center, aka "Freedom Tower," is currently under construction. However, it was once regarded as a project of "hubris and waste." The 104 story glass tower, which rises to a symbolic 1,776 feet, was once thought to require heavy government subsidization if it was to be built, much less profitable. However, with time and patience, astronomical prices which once scared away private companies are becoming acceptable.

These two situations demonstrate the difference between emergency relief and large scale reconstruction. America did well in this situation as far as emergency relief goes. However, large scale reconstruction is much more difficult. Considering how many delays and problems went into rebuilding two buildings, reconstructing a city would be a nightmare, should a nuclear attack occur.

The political ramifications of the attack overwhelmed the world. The Bush Doctrine polarized and isolated the nation. The invasion of Iraq (which was not necessarily done in response to 9/11, but the thought was there at least in prevention of a second attack) did much to characterize The United States as a rogue nation. Detainee abuses at Guantanamo Bay and Abu Ghraib ruined America's image as a humanitarian protector of rights.

Despite the negative images the attacks stirred up in America, the world saw the USA make a heavy and prolonged

investment into the affairs of foreign nations, and not just in Iraq and Afghanistan. Immigration tightened, and diplomatic visits to countries like Pakistan focused on handling domestic terrorism in their countries.

The main military and political take-aways from the 9/11 attacks were to be wise and effective when employing the American military throughout the world, never underestimate the power of forging an international coalition, and approaching counterterrorism and counterinsurgency from economic, sociopolitical, and cultural perspectives as well as martial perspectives.

### **The Hypothetical Case of Nuclear Detonation**

While we can rely on historical consequence management examples, a nuclear blast would be an extremely unique and challenging situation for America. Before we even begin to approach the problem, we must determine the most probable way in which a nuclear bomb could be detonated in the country, and what effects it would have. After that, we should consider how to go about reconstruction and relief efforts to the area. Finally, we should decide what the country should do in retribution, and how to prevent another nuclear strike from ever occurring.

Nuclear material is very difficult to handle. The United States is lucky to be surrounded by two oceans. While the Atlantic and the Pacific cannot prevent all attacks on US soil (Pearl Harbor, 9/11), it does a lot to prevent the transport of fissile material to America (fusion bombs will be ignored, because the technology to create a fusion bomb, much less store, transport, and detonate one, is seemingly beyond the capacity of any non-state actor). In order to create a weapon-ready form of uranium, it would need to be enriched to a very high

level, around 80-90%. Nuclear plants can use 30% uranium as fuel, and while meltdowns are dangerous, the kind of chain reaction needed to propagate an explosion is impossible at this level.

Assuming the lack of technical expertise and difficulty of transporting the weapon vast distances, the size of the weapon would be reasonably small. The possibility of creating the weapon or stealing it on North America is very, very small, for despite recent accountability issues on nuclear material, there is no reason to believe a non-state actor could either build an enrichment facility on the continent or steal the weapon from our military, who still remains professional and vigilant. The group would have to have some creativity with delivery, whether it be boat, missile, or land based, but the easiest way would be to carry the bomb into the center of the city. Notwithstanding the many problems and obstacles a group would face to accomplish this, for the sake of argument we will assume the group achieved successful detonation of a small nuclear weapon in the center of a population dense area.

Because of the nature of this type of bomb, many cities in America would survive, especially larger cities which would be likely targets. Casualties would be in the tens of thousands, but the focus would of course have to be on the survivors. Immediate evacuation would be required. Emergency personnel, who would have hopefully been trained that most radiation (alpha and beta particles) can be stopped with relatively small amounts of materials (i.e. thick clothing, paper, etc.), would have donned appropriate equipment to operate in a post-nuclear environment. Hospitals, especially ones located in rural areas, would need to understand that they will be at maximum capacity for extended amounts of time. All immediate emergency personnel

would need to have access to nuclear related checklists and literature, as inexperience would be a handicap.

After the blast, the bureaucracy would need to be sorted out. The state would need to be in charge of relief efforts, but give local governments' sufficient discretionary power. Although the state where the incident occurred would assume responsibility, aid should be aggressively sought after. Military resources, especially NORTHCOM and US Transportation Command would need to provide as many resources as possible to the relief effort.

America benefits from having a coordinated system of bureaucracy under the Department of Homeland Security and FEMA. However, despite having coordinated structures, hesitation can remain a problem. During Hurricane Katrina, FEMA poorly prioritized relief efforts and became weighed down in providing them. In the aftermath of a nuclear attack, time would be one of the biggest factors for a successful recovery.

The United States would greatly benefit from technology on nuclear waste disposal. The Superfund projects across America have been dealing with nuclear waste for many decades now, and the technology being used in the cleanups there could be applied to cleanups from a nuclear attack. In addition to the technology already developed, America would benefit from studies or simulations of Superfund-type clean up of nuclear waste in populated areas.

In addition to DoD being utilized for relief efforts, the American military would need to prepare for the next and more delicate step, which is proper retaliation. As we saw in 9/11, non-state actors can trigger full scale military action against other countries. We should expect nothing less in the case of a nuclear attack. Nuclear material

has specific isotopes and impurities, regardless of the technology used for enrichment. These chemicals serve as fingerprints, and would give us an accurate assessment of the source of the material.

A terrorist group can gain access to nuclear material in one of three ways: it can be sold to them from another non-state actor, perhaps a former state-sponsored scientist or a criminal group. The terrorist group can also steal the weapon from a state stockpile. Finally, a state can provide the group with the means to conduct the attack. The most likely case is the last one. Accountability on nuclear materials is very high, even in post-Soviet Russia. For a non-state actor to overcome security and the ensuing pursuit, and independently draft the scientific expertise to transport the weapon across the world and properly detonate it is immensely improbable. What is more probable is that a state who has obtained nuclear weapons and is hostile to the US would provide the non-state actor to serve as a proxy-delivery system.

Of course, a full investigation would have to take place as to who has responsibility, but the weapon would likely be the result of an orchestrated plot involving some state leadership, and the international community and America would predictably demand justice. The correct application of that justice would be the issue politicians would have to consider. Responding with nuclear weapons would be foolish, unless another state was so involved in the process that war was declared on America in the aftermath of the assault. The US should foster help from the international community to eliminate the group responsible and to bring the state leadership responsible to an international war crimes court.

Bringing a state leader to a war crimes court is a very delicate matter, but is of supreme importance. If the state has a powerful military like China or Russia, the United States may have to overwhelm their military power in order to get full justice. However, it may be much more effective to enlist the support of that foreign military. It would be best for American and world interests to separate the country's government from its population and resources. In the case in which the country was a smaller, less developed country, enlisting an international coalition like NATO and other countries would be the best case scenario for ousting a resisting government. In any case, taking routes like assassination or all out conventional warfare would be detrimental, as it avoids proper justice and would make the US appear as a rogue nation, abusing the support of sympathetic countries.

In the wake of 9/11, the US set out for another round of state building after decapitating the leadership of both Iraq and Afghanistan. The result in Iraq was widespread bloodshed which claimed thousands of lives, both civilian and military. It was an incredibly costly endeavor, both in terms of finances and lives, which took over 7 years to complete. The process of creating a new, stable government in Afghanistan, despite the benefit of having the contributions of an international coalition, will take even longer. The US would be wise to leave the state intact, but to do only what is necessary to bring war criminals to justice, and full justice at that.

Should the state have been so involved in the process that the entire government would need to be completely dismantled, and should the US be in even greater danger if the state was not rebuilt

properly, state-building, though a costly investment, would be a worthwhile one.

So in the event of a nuclear strike, the United States would need to consider both reconstruction and retaliation. The main priority for reconstruction would need to be timely deliverance of aid as well as minimization of bureaucratic red tape which would hamper the process of rebuilding the damaged area. Retaliation would need to prioritize prevention of another nuclear attack as well as delivering war criminals responsible for the attack to justice in an international venue.

The world has evolved both technologically and socio-politically since the first nuclear attacks in 1945. While America benefits from an increased ability to handle a nuclear attack, new asymmetric warfare perhaps makes America more vulnerable than ever before. America would do well to remain vigilant and prepared for such an event.

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## An Army of Lawrences

By Cadet 1<sup>st</sup> Class William C. “Chip” Kirk III

Americans have been engaging with many different and unique cultures and civilizations since before the creation of the United States. As the world and its many nations have become more interconnected and dependent, the need for cultural awareness and understanding has become increasingly important. The Middle East and the greater US Central Command area of responsibility have become well known to Americans in the past decades with US military forces continually being deployed to different countries with cultures that most Americans only “understand” through movies like *The Mummy* or *Aladdin*. The United States needs to improve its cultural understanding of the greater region to improve military operations on all levels and improve international relations between governments and the Arab world’s people. The United States should focus on building lasting relationships in the region through soft power and protect vital national interests through our friends and with soft coercive power supported by the credible threat of hard power. Better understanding the culture and history of the Middle East will allow US officials to better understand our friends, those that we want to be our friends, our competitors, and our enemies.

### Irregular Conflict

The two major US military operations in the US Central Command Area of Responsibility are Operations Iraqi [Freedom] and Enduring Freedom. US forces have begun to withdraw from Iraq, but the future of the nation and the consequences of US involvement are still not fully understood. Afghanistan is now the main focus of US military operations with President Barak Obama announcing the

surge of some thirty thousand more troops in the coming months and a promise of commitment to stability in the region. Both campaigns can be predominantly categorized as irregular conflicts. These conflicts involve a focus on the relevant population rather than an enemy force. Both operations have seen the success of further engagement with the populations as would be expected in a counterinsurgency campaign. Cultural awareness and US mindset were critical to failures and successes of engagement with the population and their Iraqi/Afghan counterparts in both theaters of operations.

Iraq went from a lightning war of success to a war that seemed unrecoverable to a situation that has allowed US forces to relatively stabilize the country and disengage the majority of combat forces. The US military and its allies won a great conventional victory over Saddam Hussein’s military in a brief six week campaign which was characterized with massed firepower and lightning drives of heavy armor.

However “by August 2004, more than 1,000 U.S. military personnel and more than 130 foreign journalists, UN workers, and contractors, in addition to hundreds of Iraqi civilians and police, had been killed by an array of different armed groups.”<sup>1</sup> US war planners and intelligence personnel planned for or gave any warning that there was a significant chance of an insurgency or ethnic disputes/civil war in a post Saddam Iraq which was recognized as a priority by leadership. “Had intelligence specialists been tasked...their starting point would have been to decode the foundations of Iraqi identity – its historical and cultural narratives...in the fight that followed the

<sup>1</sup> Richard H. Shultz Jr. and Andrea J. Drew, *Insurgents Terrorists and Militias: The Warriors of Contemporary Combat*, (New York: Columbia University Press, 2006), 197.

conventional war, history, Arab and tribal culture, and Islam mattered a great deal.”<sup>2</sup>

Even deployments planned for 2007 prepared for a strategy of isolating US forces from the population in a plan known as “transition bridging strategy”.<sup>3</sup> The strategy called for moving away from population centers and into consolidated forward operating bases (FOBs).<sup>4</sup> The problems of US closed mindedness and lack of cultural knowledge is visible with the story of a US convoy rolling through an Iraqi army checkpoint that was trying frantically to stop them to warn them of an ambush ahead. The US convoy commander “leaned out the window and said casually to the frantic Iraqi soldier ‘Hey buddy, we don’t stop for you people’.”<sup>5</sup> This strategy was changed to a population centric strategy as the “surge” began to take shape in 2007.

David Kilcullen briefed US commanders on new operating procedures. Five of his most important pieces of advice were: “Secure the people where they sleep, never leave home without an Iraqi, Look beyond the IED: get the network that placed it, give the people justice and honor...we talk about democracy and human rights. Iraqis talk about justice and honor and, get out and walk – that is patrol on foot.”<sup>6</sup> The most evident of understanding culture in the example above is the idea of “justice and honor” rather than focusing on American centric values of democracy and human rights. Another example of understanding

culture and knowing the local language can have an effect on military operations in Iraq can be seen in a soldier’s description of part of a patrol in Iraq. “...about 40 people in the narrow confines of a single-lane street. About half were the local children who, realizing I spoke a little Arabic, came up and asked cheekily if I would buy them a soccer ball from the local shop...the shopkeeper and I exchanged a few words earlier, and he was friendly.”<sup>7</sup>

One of the major causes for improved security in Iraq was the “Sunni Awakening.” While US outreach to tribes had a role in the rebellion of tribes against al-Qaeda forces in Iraq, the critical factor for the Sunni tribes turning against al-Qaeda was due to al-Qaeda’s lack of cultural awareness and closed mindedness. Kilcullen explains that, “...the sheikhs became angry and clashed with the Qa’ida because they were not giving any role to tribal custom, and were giving it all to religion...Then more and more leaders turned against the takfiriin, and now the tribes are fighting al Qa’ida.”<sup>8</sup> As relative security and stability have been able to, at least temporarily, take hold in Iraq, US forces have been able to withdraw from the cities and countryside. The US military force is drawing down to 50,000 troops by August 2010 from the current 115,000 troop level.<sup>9</sup>

As troops continue to leave Iraq they will continue to increase in Afghanistan. Afghanistan has been known as the “graveyard of empires” or “the place where empires go to die.” The United States launched its initial strikes into Afghanistan

<sup>2</sup> Ibid., 199-200.

<sup>3</sup> Thomas E. Ricks, *The Gamble: General Petraeus and the American Military Adventure in Iraq 2006-2008* (New York: The Penguin Press, 2009), 338.

<sup>4</sup> Ibid.

<sup>5</sup> David Kilcullen, *The Accidental Guerrilla: Fighting Small Wars in the Midst of a Big One* (Oxford: Oxford University Press, 2009), 136.

<sup>6</sup> Ricks, 140-41.

<sup>7</sup> Kilcullen, 136.

<sup>8</sup> Kilcullen, 160.

<sup>9</sup> Adam Entous, “Iraq’s March Vote Won’t Affect Troop Plan, US Says,” *Reuters*, December 9, 2009, <http://www.reuters.com/article/idUSTRE5B90FX20091210> (accessed December 14, 2009).

in late 2001 following the terrorist attacks on the United States on September 11, 2001. These first strikes were led by US Special Forces and government agencies such as the Central Intelligence Agency. The war was operated similar to a classical unconventional warfare campaign with small teams of Special Forces supporting and advising indigenous afghan forces. The initial contact and success with Northern Alliance Forces would not have been successful if cultural understanding and at least some basic language skill was not available to the Special Forces ODA teams. Due to lack of time to prepare for engagement with Afghan forces, many teams still experienced problems and limitations of translators.<sup>10</sup> There is no doubt that the once bright success of the initial strike into Afghanistan has deteriorated due to the change of focus to the Iraq War. Insurgent groups and terrorists have been able to intimidate or gain the loyalty of tribes across Afghanistan as the US mission over the past years has been one of strategic defense until relative success could be reached in Iraq.

### Bonds of War

Building relationships has been equally if not more important in Afghanistan than in Iraq in operationalizing counterinsurgency operations. Major Jim Gant shows the importance of this factor when he describes the relationship between his ODA team and the tribe/village they worked with. He says, "...the tribe offered us outstanding intelligence that allowed us to target both insurgents and terrorists in the area. Their loyalty was with us. Not Afghan

forces or US forces, but us."<sup>11</sup> The relationships and trust his team built with the village over relatively a short period of time, would not have been possible without a solid foundation in cultural understanding and open-mindedness. The tribal leader, Malik Noorafzhal, said to Major Gant, "Jim, the last time I saw a person with a face like yours (white) the Russians killed 86 men, women, and children of my village...They never took my village. We are ready to fight again if we have to. You have great warriors with you. We will fight together."

These relationships were built initially through cultural understanding and were persevered and developed with trust and mutual respect. The ODA team's relationship grew so strong that in one case the tribal elders of the village they were working with came to their firebase the morning after it was attacked simply to check up on the team and see if they could offer assistance. The future of Afghanistan depends on the United States' ability to work with Afghan tribes and earn mutual trust and respect with them.

### Human Dynamics

Culture is much more important than to allow for the implementation of counterinsurgency operations in the US Central Command AOR. Kilcullen describes the "regional dynamic" that conflicts are not isolated events, they can spill over into other countries and that any US strategy for a conflict must take into account the outside influences of the region rather than treating the conflict as if it "were an island somewhere in the Indian Ocean."<sup>12</sup> Conflicts must be approached with the understanding

<sup>10</sup> Linda Robinson, *Masters of Chaos: The Secret History of the Special Forces* (New York: Public Affairs, 2004), 170-71.

<sup>11</sup> Jim Gant, *One Tribe at a Time: A Strategy for Success in Afghanistan* (Los Angeles: Nine Sisters Imports, 2009), 15.

<sup>12</sup> Kilcullen, 152.

of it being looked at as Kilcullen describes as a puzzle piece in a complex regional system.”<sup>13</sup> A conflict anywhere in the world is but a single side act on an extensive stage of interrelated events. While culture is particularly important to the current operations in Iraq and Afghanistan, culture is also incredibly important on the strategic level of long term partnerships and international relations throughout the US Central Command AOR.

The Central Command AOR covers much more than just Arab cultures, however the Middle East which dominates many of the countries the US interacts with in USCENTCOM are of Arab backgrounds. Arabs, first described as Aribi, were early settlers and camel herders of the Fertile Crescent which was initially composed of the Syrian-Mesopotamia and Northern Arabia areas.<sup>14</sup> The Arab world is now considered the region from the West Coast of Northern Africa across the Arabian Peninsula to the western borders of Iran.<sup>15</sup> It is extremely important to understand cultures that are different from our own because it will be the easiest to fail in these settings than ones that might be similar. Arab culture is different in many ways from Western culture. Arab culture is based on different values than most would consider being core Western values. While there are many ways to describe the values of Arab culture most can be related to relationships, honor, and the importance of Islam.

In relation to human emotions and the importance of the human dimension in the Middle East, Arabs look at life in a

personalized way. They are concerned about people and feelings and place emphasis on human factors when they make decisions or analyze events.”<sup>16</sup> T.E. Lawrence [in describing] Arab culture [said that]—in Arab culture, people are more important than rules.”<sup>17</sup> In the Arab world, relationships and interpersonal communication is much more important than in the Western world. The human dynamic and people interacting means everything to Arab culture. Arabs believe friends should visit each other at a minimum every couple days. For example, an Arab called his British friend saying, “I haven’t seen you anywhere. Where have you been for the last three days?”<sup>18</sup> In fact, the word that is often used to translate “privacy” into Arabic is translated to “loneliness.”<sup>19</sup> Nydell quotes a young Arab American as saying, “In the United States...you can have more personal space, I guess it is about the best way to put it. You have privacy when you want privacy. And in Arab society they don’t really understand the idea that you want to be alone. That means that you’re mad, you’re angry at something, or you’re upset and you should have somebody with you.”<sup>20</sup>

Relationships are crucial to any business in the Middle East with successful agreements arising due to good relationships, not the opposite with good relationships arising from continued successful business which might be found in Western society.<sup>21</sup> A meaningful relationship in the Peninsula (Saudi Arabia/Middle East) takes time to establish.

<sup>13</sup> Ibid, 152.

<sup>14</sup> Heinz Halm, *The Arabs: A Short History*, trans. Allison Brown and Thomas Lampert (Princeton: Markus Wiener Publishers, 2007), 4-5.

<sup>15</sup> Margaret K. Nydell, *Understanding Arabs: A Guide for Modern Times* (Boston: Intercultural Press, 2006), xxii.

<sup>16</sup> Nydell, 30.

<sup>17</sup> Ibid., 31.

<sup>18</sup> Ibid, 20.

<sup>19</sup> Ibid.

<sup>20</sup> Ibid, 21.

<sup>21</sup> James Peters, *The Arab World Handbook: Arabian Peninsula & Iraq Edition* (London: Stacey International, 2005), 20.

It may take months or even years.”<sup>22</sup> While a good reputation may allow relationships to develop faster, an Arab will still want to make his own judgments of any individual.<sup>23</sup> Arabs work through relationships, not institutions. To compare, if a Westerner needed to register a vehicle with the government, they might ask which office they needed to go to in order to give the appropriate information to the official assigned to that office, an Arab on the other hand would ask the question of who they know that might know someone at the appropriate office.<sup>24</sup> Relationships also shed light to the loyalty and dedication Arabs have to each other and the emotional connection they have through their vast interconnected friendships. While Westerners see more value in having objectivity, Arabs see importance in letting emotions influence decisions. While using a logical thought process may make sense to a Westerner, it is not as important to an Arab who cares more about emotions and subjectivity. While Arabs will look at things logically as can be seen with their cultures great achievements in algebra and science, they also reserve the right to view events subjectively to protect their honor or better suit their goals.

Honor is incredibly important in Arab culture as well. In Arab culture, a person’s dignity, honor, and reputation are of paramount importance, and no effort should be spared to protect them. Honor (or shame) is often viewed as collective, pertaining to the entire family or group.”<sup>25</sup> The value of honor extends to a person’s word, loyalty to the family, respect for

elders, and caring for people in need. These important issues of honor can also be described as honorable behavior, courtesy, and unfailing hospitality.”<sup>26</sup> Family loyalties are stronger than those of friends and business.<sup>27</sup> The need to maintain honor explains other Arab customs that may seem strange to Westerners. As family honor is so important to protect and women are believed to be able to cause more damage to the honor of a family, practices were established to “protect” women from situations that may hurt the family’s honor.<sup>28</sup> Saving face is more important than accepting the reality of situations. Nydell explains this dynamic by describing that there is nothing to be gained by explaining the successes of Israel in farming or manufacturing compared to their Arab counterparts because an Arab would insist that the situation is not as you describe it and bringing up issues such as Israeli occupation of Arab lands or the moral deterioration of technological societies.”<sup>29</sup> The need for Arabs to take certain actions that may not make logical sense to someone in the West might be explained by the importance of honor and the many obligations to maintain it.

### Mindsets and Beliefs

As identified by Dr. Brent Talbot on the first day of MSS 496 (Military Strategies of Western and Central Asia) course this year, “you cannot talk about the Middle East without talking about Islam.”<sup>30</sup> Halm states “Islam is without a doubt a constituting element of the Arab world, at least in the early Islamic period, when the notions of

<sup>22</sup> Ibid., 21.

<sup>23</sup> Peters, 21.

<sup>24</sup> Patrick Macdonald, *How to be succeed in the Gulf: Living & Working in an Arab Culture* (New York: BookSurge, 2006), 25.

<sup>25</sup> Ibid., 15.

<sup>26</sup> Peters, 19.

<sup>27</sup> Nydell, 71.

<sup>28</sup> Ibid., 43.

<sup>29</sup> Ibid., 28.

<sup>30</sup> Brent Talbot, “MSS 496 Class,” (lecture, USAF Academy, CO, Fall 2009).

Arab and Muslim largely coincided.”<sup>31</sup> Islam finds its beginning with the prophet Muhammad in 610 A.D. when he received a divine revelation.<sup>32</sup> Islam, translated from Arabic means –submission to the will of God.”<sup>33</sup> Religion is incredibly important to life in the Arab world. Nydell states that, –there is no place for an atheist or an agnostic...shock and amazement would be the reaction of most Arabs, along with the loss of respect for you.”<sup>34</sup> The Quran, Islam’s holy book, give precise directions for all aspects of daily life. –Whereas Christianity sets out general moral principles against which actions may be judged, and the law in Christian society may be amended as circumstances change, Islam and the Shari’a are indissolubly linked, and any prescriptions in them may not be altered.”<sup>35</sup> Islam has five obligatory acts known as the Pillars of Islam; Shahaada (The Declaration of Faith), Salah (Prayer), Zakat (Almsgiving), Sawm (Fasting), and Hajj (The Pilgrimage to Makkah). It is important to recognize that many of the same lessons that can be found in the Old and New Testaments of the Bible are also found in the Quran.<sup>36</sup> Islam is a unifying identity throughout the Arab world and across all Muslims of the world whether they are from the United States or Indonesia. Islam is an integral part of everyday life throughout the Muslim world and is the basis for many of the principle values and culture of the Middle East and the countries in the Central Command AOR.

The US Central Command AOR covers the Middle East and South and Central Asia. The region of Iran,

Afghanistan, Pakistan and Central Asia are not Arab regions but some of the same traditional mindsets and Islamic beliefs apply there as well. US policy in this region of the world has been in the words of Samuel Huntington, a –clash of civilizations.” Condoleezza Rice said in Cairo in 2005, –For 60 years, my country, the United States, pursued stability at the expense of democracy in the Middle East – and we achieved neither. Now we are taking a different course. We are supporting the democratic aspirations of all people.”<sup>37</sup> While the United States should seek to share its great values with the rest of the world, the way that those values are shared is critical to the success of the goal of establishing liberty, democracy, and justice around the world. The United States must share its values in the Middle East through long term soft power engagement so that Western ideas and values can integrate with current traditions and cultures. An extended soft power engagement strategy is the most effective and sustainable method to further American vital national interests in the region.

### **Soft Power, Hard Power, and Persistent Engagement**

The most important aspect of the United States’ interacting with other nations should be diplomacy and persistent engagement. Soft power is the ability of a nation to attract and co-opt behavior by communication and relationships compared to hard power being able to threaten or induce behavior with threats, intimidation, payment, or rewards.<sup>38</sup> Dean of the John F.

<sup>31</sup> Heinz Halm, *The Arabs: A Short History*, 29.

<sup>32</sup> Ibid 30.

<sup>33</sup> Peters, 28.

<sup>34</sup> Nydell, 81.

<sup>35</sup> Peters, 29.

<sup>36</sup> Nydell, 87-9.

<sup>37</sup> The Economist, –Waking From its Sleep: A Special Report on the Arab World,” *The Economist*, 25 July 2009, 5.

<sup>38</sup> Joseph S. Nye, –Soft Power, Hard Power and Leadership,” Harvard, October 11, 2006, (<http://www.hks.harvard.edu/netgov/files/talks/docs/1>)

Kennedy School of Government, Harvard University, Joseph Nye Jr. described soft power by saying, “power is the ability to influence others to get what you want. And you do that three ways. You can do it with threats or sticks. You can do it with payments or bribes. You can do it with attraction or co-option. And it's the third of those that's soft power.”<sup>39</sup> He goes on to describe the three ways soft power is projected; framing policy (include/seriously take into account the interests of others), living out and forwarding your ideals as a society, and what popular culture presents around the world.<sup>40</sup>

The Middle East and US Central Command in general has been categorized in American culture as an area of continuous strife. The US has been involved with conflicts in the Middle East in some way since WWII, through the Arab-Israeli wars, Desert Storm, Northern Watch, Operation Enduring Freedom and Operation Iraqi Freedom which were briefly described above. While the US has a history of armed conflict in US Central Command AOR, it should not be the sole focus of US policy in the region. The effective use of soft power is critical to the success of the United States on the world stage and especially in the Middle East due to the continuing mission there. Relationships and friendship are a serious part of Arab culture and the US should better apply this to its foreign policy in the Middle East to be more effective in protecting our vital national interests and defense of our nation. Joseph Nye states that:

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(accessed December 14, 2009).

<sup>39</sup> Joseph S Nye, interview by Joseph Lelyveld, New York, NY, April 12, 2004, transcript, Federal News Service, Washington DC, USA, [http://www.cfr.org/publication/6939/soft\\_power.html](http://www.cfr.org/publication/6939/soft_power.html) (accessed December 14, 2009).

<sup>40</sup> Nye, interview by Joseph Lelyveld.

Our military wrapped up about a quarter of al Qaeda in Pakistan—I mean, in Afghanistan. And the only way you can wrap up a transnational network which has cells in 50 or 60 countries is by close civilian cooperation—intelligence sharing, police work across borders, tracing financial flows, and so forth. And that's the point, that you can't bomb Hamburg or Kuala Lumpur or Detroit. You've got to have close civilian cooperation. And the extent to which others cooperate with you depends in part on their own self-interests. But it also depends on how attractive you are. I mean, the degree of cooperation depends on your soft power.<sup>41</sup>

The United States should not see military force as the key instrument of national power. While military power is able to do things which no other instrument of national power can accomplish, it also cannot achieve many things that can be done by others and in some cases, can have very negative effects on the country that is using it. Trust and mutual respect is critical to creating lasting friendships in the Middle East and the United States needs to create lasting friendships to better accomplish its objectives in the region and around the world. The best way for the United States to create this trust and respect is to in the words of Former President Theodore Roosevelt, “talk softly but carry a big stick.”

Words are hollow if they cannot be supported with actionable power; however, words are sustainable while continuous use of hard power is not. The current US policy of attempting to stop the development of Iranian nuclear weapons is a great example of the concepts presented in this paper. The

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<sup>41</sup> Ibid.



US policy for the Iranian nuclear procurement process has been shadowed with two camps of thought, one focused on soft coercive power and one focused on the use of hard military power. While it may be argued otherwise, the US does not have a “good” military option to deal with Iran due to it already being engaged in two major operations in Iraq and Afghanistan, international and internal pressures, and the significant vulnerability of major support and command and control structures of US forces in the region. The Iranian nuclear issue is much more involved than just Iran and the United States. The situation can be viewed in many different lenses; Saudi Arabia and Iran, Russia, China and the United States, Israel and Iran, the United States and Iran, Arab aristocrats and Islamic fundamentalists, etc. The direct way to deal with a challenge is not always the best way and is sometimes not even possible.

Former President George W. Bush, when asked about US foreign policy with Iran, said, “We’re relying upon others, because we’ve sanctioned ourselves out of influence with Iran . . . in other words, we don’t have much leverage with the Iranians right now.”<sup>42</sup> However, the United States has been improving coordination of peaceful coercive measures against Iran by working with the governments of Russia and China which have previously made US led sanctions ineffective. Defense Secretary Gates stated recently that significant international sanctions would be used against Iran if it continues to maintain or expand its current nuclear program. He also said that military options remain available for the United States. He said that Iran’s

provocations have brought together the international community, including Russia and China, which are now much more willing to confront Iran about its nuclear program.<sup>43</sup> Similar to every deal brokered between nations, the ability for the United States to gain more support from Russia and China also has a cost and may be used as an ongoing restraint in other areas of interest. It could be argued that Russia and China support Iran in an effort to counteract US involvement in the Middle East. The United States removing the ground-based missile defense sites in Poland was an attempt to work with Russia to put more pressure on Iran. This demonstrates the difficulties and the costs of the need for coordinated coercive measures. It also demonstrates the ways that many different nations and their interests influence an environment.

What the United States does in one area of the world and with different countries may be done to have an effect on other areas of the world. Other nations may participate in activities in one part of the world to have an effect against the United States in a completely different part of the world. Soft coercive measures such as economic sanctions are only successful if they are coordinated and can be supported with hard coercive power but are more effective than hard power alone. Effective coordination on an international scale can only be successful through effective diplomacy; but as seen above, this is usually extremely difficult with the many competing interests of different groups. The ability of the United States to have more effective means to coerce states depends on its soft power, or “attractiveness” as described by Joseph Nye.

<sup>42</sup> Susan E. Rice, “We Need a Real Iran Policy,” *Washington Post*, December 30, 2004 <http://www.washingtonpost.com/wp-dyn/articles/A35655-2004Dec29.html> (accessed December 14, 2009).

<sup>43</sup> Associated Press, “Gates Stands Firm on US Withdrawal,” *Associated Press*, December 12, 2009 <http://www.azstarnet.com/sn/news/321061.php> (accessed December 14, 2009).

Major Michael Monson makes a case for American soft power to help solve the Iranian nuclear procurement problem in his paper titled “American Soft Power: An Innovative Approach to Neutralizing Iran’s Growing Security Threat.” In a country comparison of US trade engagement with six Middle Eastern countries and their populations’ views of the United States, he finds that the more the US is involved with nations the more positive [those nations] feel toward the US.<sup>44</sup> The views of some of the officers he worked with are described below.

What do average people in Saudi Arabia, Jordan and Bahrain think about America? According to the Middle Eastern coalition of international military officers attending the Air Force’s Air Command and Staff College at Maxwell Air Force Base in Alabama, their preconceived notions of the U.S. and Americans, as expected, were not very favorable. However, after living in Montgomery, Alabama and working with Americans nearly every day for eight months, they generally agreed that they have enjoyed their time in the U.S. and now have a much higher opinion of America. During a question and answer session with these mid-level officers, they said they have made many friends in the U.S., traveled all across the country, and even enjoyed the fine southern culture that Montgomery offers<sup>45</sup>

<sup>44</sup> Michael G. Monson, *American Soft Power: An Innovative Approach to Neutralizing Iran’s Growing Security Threat* (Maxwell Air Force Base: Air Command and Staff College, 2005) 15.

<sup>45</sup> Ibid, 14.

## Conclusion

People around the world admire and respect American values and the United States. The failure of the US to fight the information war in the War on Terrorism is often discussed. Evidence of the US not effectively combating terror organizations on this front is evident with Capt David Blair’s claim that “al-Qaeda’s brand recognition rivals that of Coca-Cola.”<sup>46</sup> The broad spectrum of information operations will not be effective if it is considered a specific military operation or something that has central control and coordination. Information warfare is warfare of the masses and is won by sheer mass of people and dissemination sources, whether direct or indirect. It cannot be as effective, if effective at all, if it is controlled or restrained to a narrow element of engagement. Soft power is information operations and both are how to better secure US interests in the Middle East and around the world.

While broad strategic level US engagement in USCENTCOM involves a cultured immersion into the Middle East, cultural awareness is incredibly important for the US military and policy makers so that direct engagement can be more effective. As can be seen earlier in Major Monson’s quote, direct interaction between the US military and foreign militaries improves the feelings about the United States and its interests. This is equally important to State Department officials and other civilian officials which will be responsible for engagement with foreign governments. Direct soft power engagement

<sup>46</sup> David Blair, “Asking the Right Questions,” *Air & Space Power Journal* XXII, no. 4 (Winter 2008): <http://www.airpower.au.af.mil/airchronicles/apj/apj08/win08/blair.html> (accessed December 14, 2009).

involves increasing US military exchanges and training exercises with countries in the Middle East.

Direct soft power engagement requires immersion into the Arab cultural experience which is built upon partnerships and friendships with countries and their leadership in the region. Increasing relations between US personnel, both military and civilian, and other nations also helps both sides understand how each other operates and helps the coordination and fluidity of operations in the future. Relationships built now will also increase the effectiveness of peaceful coercive power in the future.

The more the US is able to accomplish with soft power the more sustainable its operations will become. This approach will also increase the flexibility and effectiveness of its hard power. US military power will not become continuously engaged in an unending counterinsurgency campaign around the world, but will be able to provide a capable coercive element to support US diplomacy and act as a quick reaction force to support friends around the world.

The future of US foreign policy and its effectiveness to achieve vital national interests far into the future depends on soft power. While soft power is in part a very broad-based interaction between cultures in the world, the US military and government have an important role in direct soft power engagement. Direct soft power engagement relies upon individuals who have cultural awareness and are open minded. US policy needs to take into account the culture and history of regions to better achieve its goals.

Long-term soft power engagement is the only sustainable and effective way to secure the stability and leadership of the

United States in the future. The United States must shape its foreign policy to working with and through the nations of the world, not against them.

## **Terrorism and Technology**

by Cadet First Class Andrew Smith and Cadet First Class Aaron Widener

Terrorism is one of the greatest threats to the national security of the United States. This problem exists not only for the US, but also for the entire world. Terror networks continue to evolve with dramatic rapidity, and persuasive ideologies make fighting those who use terrorism increasingly more difficult. Until the US was attacked on September 11<sup>th</sup>, terrorism was something that happened to other countries for other reasons, and was not considered a part of US National Security Strategy. With this attack, al Qaeda and other religious fundamentalists were catapulted into the spotlight and focused US attention on the problem.

Preventing terrorist attacks is one of America's main goals, but this is only the surface of a more complex problem of preventing people from becoming terrorists and sharing plans of destruction. Also, members must constantly be converted, trained, and groomed for their missions. By researching terror networks and various other centralized organizations, including their use of modern internet and technological capabilities, it is possible to learn how they can be fought. The analysis of changing informational systems like the internet as well as different types of organizations will provide ways in which various decentralized groups have been combated in the past. With this information in mind, a methodology specific to the Air Force and the Department of Defense will be developed.

### **The Internet**

The Madrid bombings are one example of an increase of homegrown

terrorism, or those who grow up in westernized society but later radicalize. The comparison can be shown as the difference between terrorist attacks that were perpetrated prior to 2004 and those occurring after. Previous attacks were prepared and then executed using face to face meetings at ethnic restaurants or barber shops near radical Islamist mosques. After 2004, attacks were inspired and planned using media on the internet such as the Global Islamic Media. Approximately 90% of people in Europe have internet access and as police have begun to monitor radical meeting places, computer-mediated communications allows more people to be involved with less direct threat to their person (Sageman 2008).

The internet is basically constructed of two major systems. The first is the Worldwide Web. This part contains websites that correspond to the non-digital world, such as books, newspaper, radio, and television. These are passive means of information transference where people merely absorb information about various topics. These can be articles which describe operational knowledge or may exhibit passive opinions on tenants of Salafism. People have learned how to build bombs and improvised explosive devices from websites. Trained bombers still are able to produce better and more reliable bombs but this requires training camps, travel, and a greater possibility of being compromised in the process. Sageman states however, that this is not the "engine of radicalization." Websites are merely useful for reinforcing already made-up minds and are the lesser of the two types of media on the internet (Sageman 2008).

The more important system is the vast active communication that can take place between people via e-mail, listservs,

forums, or chat rooms. This type of communication is comparable to the classical systems of letters, telegrams, and telephone. These types of communication mold human relationships and are more impactful on lives than the type of passive media previously mentioned. One of the interesting aspects of these forums is the way in which people interact due to the apparent anonymity that exists as merely a screen name online. People are more likely to self-disclose which makes them feel more intimate and feel like they know the core of the other person. This revolutionary change in communication is helping to shape the 21<sup>st</sup> century and will shape the future of fundamentalist Islam and terrorist interactions. People's views can thus be changed and often times substantiated by this intensely biased and radical talk exuded from people online in chat rooms and forums (Sageman 2008).

The difficulty in fighting terrorism becomes more pronounced, as analysis of websites and static material is relatively easy compared to the ever shifting, changing, and undulating mentality of those in chat rooms and on forums. The internet remains extremely fluid and if sites are blocked or highlighted by a government agency, then people will move to a new site, change their names, and begin a new identity. This is what makes terrorism in the 21<sup>st</sup> century so difficult to combat and predict. In addition, if a US agency attempts to use psychological operations to dispute mindsets, people will just discount it and move to another website or forum where people conform to their views. The US is facing a difficult challenge and that perhaps the best way to combat these issues is to increase the ability to wage cyber warfare (Sageman 2008).

### **Homegrown Terrorism and Its Increased Decentralization**

The immediate mobilization of the US to invade Afghanistan and to disrupt the established Taliban government seemed to surprise the Central al Qaeda leadership. The central training camps in Afghanistan were effectively neutralized, and although a few members of the elite al Qaeda community do continue to survive, they are effectively cut off from command and control of the rest of their units. A few of the changes include the "training camps," moving into Waziristan which is in the Federally Administered Tribal Areas in Pakistan. Although the camps in most cases are smaller and consist of fewer students, the fact that they exist and are receiving recruits is the troubling part of the problem. In addition, evidence indicates that camps are receiving recruits from outside regions. These new recruits come from the west or other foreign nations, travel to the region for a training program which lasts about four weeks, and then return to their home areas. This is the puzzling scenario because despite the disruption of Central al Qaeda, people are still willing to come, learn, and return to their respective regions without any direction from above (Sageman 2008).

It is highly unlikely that al Qaeda Central has any ability to communicate with these individual cells of terrorists or contribute monetary support or advice. Groups such as the Madrid bombers merely use the al Qaeda name and attempt to carry out the perceived goals of the Ummah or Islamic community in whatever way they see fit. This individualization has created problems within the existing terrorist sects, and often shows the disconnect between members and leadership. For instance in Algiers the terrorist bombings that are often

against a civilian population are creating debate among the Algerian Terrorists. The debate may result in another split as the techniques of achieving goals and ends are questioned and challenged (Sageman 2008).

Sageman states that although at one point al Qaeda central seemed to be able to mobilize inside of Pakistan and muster some attacks against high political leaders, this capability has decreased. In addition, lack of discipline in the ranks causes foolish bombings and attacks against highly valued areas of Pakistan which causes these regions to turn against the cause. This reinforces the idea that central al Qaeda is not in control and is actually only observing actions that various groups of followers decide to do. Although this trend is still present in Pakistan, the ousted Taliban government has begun to use terminology and training camps in a similar manner to al Qaeda (Sageman 2008).

Some of the most stirring and troubling evidence comes from the new wave of terrorists entering the world scene. These “homegrown terrorists” exist in their respective societies and become intrigued and intertwined with al Qaeda despite the fact that they never have direct contact with, or funding from, the central leadership. It is argued that the method of radicalization does not vary that much over time, but only the fact that these new groups do not have to communicate with a central agency in order to carry out missions is different. It is important to realize that the radicalization occurs due to events within the host nation, or the place where these people live, and is not the response to events elsewhere in the world. Sometimes these people have traveled from their homes to Afghanistan or Pakistan for training or to participate in fighting, but they were radical before they got there, not afterwards. This shows the

prevalence of homegrown terrorists and how they exist without any contact with a central set of leadership (Sageman 2008).

### **A Framework for an Integrated Approach to Terrorism**

It is clear to see that terrorism is something that will not go away in the near future. Currently the US is doing a good job of improving relations on a personal level, educating children and soldiers, as well as adjusting mindsets in dealing with the Middle East. One issue yet to be addressed is how to combat the spread of terrorist ideals over the internet, or the increase in the “homegrown” terrorism that may come to dominate the rest of the 21<sup>st</sup> century. From all of these sources the importance of an integrated approach can be seen. The following list of five ideas provides a strong framework for achieving this: Take the glory out of terrorism, diminish the sense of moral outrage, counter the enemy’s appeal, eliminate discrimination against Muslims, and fund scientific research on terrorism (Sageman 2008). These ideas are mainly to be applied in a broad sense to change ideologies rather than ways to find and remove terrorists which already exist.

Terrorists achieve glory by being in the top ten wanted by America and by the size of the price on their head or information leading to their capture. This gives young terrorists the impression that they are selfless heroes for those who are too weak or unable to fight. Military action in many ways gives young Muslims an idea to strive towards; the modern Robin Hood or other hero is fighting the outside more powerful aggressors. The best way to take the glory out of terrorism is to treat them as common criminals. Arrested terrorists will not be cheered as they are taken into prison in handcuffs, and the terrorist will fade into

oblivion and no longer inspire young Muslims to fight (Sageman 2008).

Diminishing moral outrage and countering appeal are linked together and thus must be solved together. The invasion of Iraq galvanized the al Qaeda movement and allowed its members to make claims against the “imperialist Americans” who were “taking over Islamic countries”. People understand that criminals must be brought to justice, and terrorists are criminals. The counter is that when Muslims are singled out as the perpetrators, or at least when it appears this way, they become angry. Our courses of action need to be focused specifically on the criminals. The appeal of terrorism arises from two major causes. One is that people admire the sacrifice Osama bin Laden has made in his fight for Islam. They may not agree with his policy or tactics, but strength in belief is something to be admired. The Islamic people need to see other Muslims’ achievements and adopt other role models. Most Imams preach peace and anti-violence but this rarely makes the news, and those upstanding members of society are not represented. If an Imam preaches violence, he is immediately propelled into the spotlight by the media. This makes it difficult for many Muslims to know the truth as well as to find role models outside of famous terrorists. The US needs to do a better job of showing the positive role models and encourage those who speak peace to be seen and heard (Sageman 2008).

The final two changes that need to occur are within US borders. First, increased funding for research on terrorism will help provide a clearer picture of the field. Questions such as who are terrorists, how do they become terrorists, and what are their demographics are questions that have not been adequately answered. If the US is

to win the hearts and minds, it must first know whose hearts and minds must be won as well as what methods may work. Part of the completed research has shown that discrimination needs to be decreased to defeat terrorism. Muslims in Western nations are discriminated against, become marginalized, and then look for a place to fit in. These places are often Mosques or chat rooms where angry young people can vent about the travesties against them. Most do not make the jump to full-fledged terrorist, but the few that complete the process are the ones that carry out acts. The integration of Muslim immigrants into society is another way to prevent terrorism, and this is done by stopping discrimination and promoting understanding (Sageman 2008). It is next important to understand how these organizations operate on the larger scale, which is greater than a single individual.

### **Decentralized Organizations**

Decentralized organizations are an interesting and highly impactful force in the 21<sup>st</sup> century. What is a decentralized organization and how are they so impactful? By first being able to recognize a decentralized organization, it is possible to identify some that exist for comparison with al Qaeda. Brafman and Beckstrom provide two instructive examples in their book The Starfish and the Spider: The Animal Liberation Front (ALF), and the evolution of peer-to-peer file sharing (P2P) (Brafman and Beckstrom 2006). A “spider” organization is a corporation or a group that is not decentralized. It has a brain or command structure. On the other hand, a “starfish” is completely decentralized with no executive authority and distributed systems. A list of ten criteria can be used to identify the level to which an organization is decentralized: someone is in charge, there is a headquarters, removing leadership kills it,

division of roles exists, destruction of a single unit harms the whole, knowledge and power are concentrated, there is rigidity, units are funded by the organization, there is a specific number of participants, and groups communicate through intermediaries.

Each of these categories is relatively self explanatory; however a comparison to the P2P networks of the internet is helpful. The difference between a corporation and a P2P network is first of all apparent in the fact that a CEO is in charge of a corporation directing efforts and setting the vision. The P2P network on the other hand lacks a structure or even someone who organizes the distribution of information. There is no physical headquarters to house employees and servers like a corporation has, but only a distribution of people that can communicate with one another. By removing a company's headquarters or CEO the organization will die. A P2P network does not require a physical location or leader, rather any number of individuals or places can influence its actions over time (Brafman and Beckstrom 2006).

A corporation has a clear division of roles, sales department, advertising, human resources, etc. In comparison, in a P2P network any individual can do any number of jobs. Uploading new songs, changing software, or creating a new interface are all up to individual people with no specific defined role. Due to this fact, if a marketing department is removed from a corporation, the corporation will fail. A P2P network has no divisions and even if you remove 95% of its users, the network will still survive and flourish. This is additionally linked to the concentration of power and knowledge. A corporation concentrates information and power in certain people and departments while the P2P network leaves power and information in the hands of a group of

individuals connected via a network (Brafman and Beckstrom 2006).

A flexible organization is more likely to be decentralized, while a rigid organization will likely be centralized. In addition, it may be difficult to ascertain the number of participants or employees in a starfish system, while a corporation has a specific payroll and list of employees. A decentralized organization also relies on individuals to provide funding for use in implementing plans while a corporation provides a specific budget and expects a tangible result from the funding. Finally, a decentralized organization can share information across all members while a corporation funnels information up a chain of command and back down through members. All of these factors contribute to the starfish or spider like characteristics of an organization (Brafman and Beckstrom 2006).

### **Terrorist Organizations versus DoD**

If we look at a comparison between the Department of Defense and the organization of al Qaeda or the Taliban, it is possible to categorize them using these criteria. The following diagram is an analysis of what each organization possesses and how centralized it is.



## Terrorist Organizations

There's someone in charge	X	There's no one in charge
There are headquarters	X	There are no headquarters
If you remove its head, it dies	X	If you remove its head, it survives
There's a clear division of roles	X	There's an amorphous division of roles
Harmed if a single unit is destroyed	X	Unharmed if a single unit is destroyed
Concentrated knowledge and power	X	Distributed knowledge and power
Organization is rigid	X	Organization is flexible
Units are funded by the organization	X	Units are self-funding
You can count the participants	X	You cannot count the participants
Groups communicate through intermediaries	X	Groups communicate directly

According to these criteria, terrorist organizations seem to be highly decentralized with all ten of the categories falling on the starfish side. This validates the idea that these organizations are hard to track, and extremely versatile at what they do. The amount of upper leadership can be debated as well as the actual number of members that may exist within the organization. However, this interpretation makes sense and shows the amount of decentralization.

## Department of Defense

There's someone in charge	X	There's no one in charge
There are headquarters	X	There are no headquarters
If you remove its head, it dies	X	If you remove its head, it survives
There's a clear division of roles	X	There's an amorphous division of roles
Harmed if a single unit is destroyed	X	Unharmed if a single unit is destroyed
Concentrated knowledge and power	X	Distributed knowledge and power
Organization is rigid	X	Organization is flexible
Units are funded by the organization	X	Units are self-funding
You can count the participants	X	You cannot count the participants
Groups communicate through intermediaries	X	Groups communicate directly

The Department of Defense appears to be in exactly the opposite category as various terrorist organizations. Again it is incredibly difficult to say one way or the other if individual units if removed will cause absolute collapse. Furthermore, the capabilities of each service as well as service members are definitely distributed. However, this diagram still illustrates the difference between the two organizations which will be engaged in hostilities.

## Combating Decentralized Organizations

How does one combat a decentralized organization? When attacked, a decentralized organization tends to become even more open and decentralized. This can be observed from the fact that although al Qaeda leadership no longer gives orders, attacks continue to happen and plans continue to be made. This means that

although direct attack may appear to be a good idea, three other strategies present themselves as being more useful: changing ideology of terrorist organizations, centralize the terrorist organization, or decentralize your organization (Brafman and Beckstrom 2006).

Changing ideology can be achieved through methods previously mentioned. By providing integration opportunities in the places where these people live as well as encouraging involvement in communities around the world, extreme ideologies die (Brafman and Beckstrom 2006). Relief operations in third world countries change individuals' perspectives about the US and what it stands for. In the same way that a decentralized organization is difficult to control and influence when spreading negative ideals, it is equally rapid in transferring the spread of positive ideas. Helping people help themselves not only gives them a purpose, but also allows for them to spend time working for a cause that is specific and relevant to their community rather than some far off war for Islam.

The second option is to centralize the enemy. In an example regarding the fight against the Apache in the late 19<sup>th</sup> century, the roving bands of Native Americans were able to cause increasing amounts of damage due to their migrant lifestyle and ability to act independently. These types of actions by the Apaches were considered normal all the way from the early 1600's when Spanish explorers found the area until around 1914. The way the Apaches were eventually defeated and removed from causing mayhem included a very simple solution. The US gave them cows and other grazing animals. It was now impossible to remain vagrants moving from place to place if they wished to maintain their material property. Due to the increased value of material

goods, the tribes no longer moved and changed, thus they were able to be controlled (Brafman and Beckstrom 2006). This is an example of how changing the environment and changing the values of a people centralized them and created an opportunity for another centralized organization, the US Army, to defeat them.

The last option is to decentralize your organization as well. This is incredibly difficult for the US military to do; however, it seems with increasing technological capabilities this is an ever increasing possibility. The use of technology to align hundreds of people on the battlefield also allows individuals to have the information of a large group and act based on their piece of the puzzle in the context of the whole picture (Brafman and Beckstrom 2006). As smaller and better informed units deploy to Afghanistan and Iraq, individuals are able to function more as part of a starfish that is supplied via interaction with a spider. The blending of these two types of systems is very beneficial and one of the best ways that an effective stand can be made against the decentralized organization of al Qaeda.

These methods address more mentalities than it does of actual combat against people who are already terrorists. How can people who will commit violent acts in the future be identified and stopped? Levitt and Dubner's book, SuperFreakonomics, provides some ideas, mostly based on the concept of the decentralized system, and banks. A computer program was created to monitor for fraud and abuse of funds as massive amounts of money changed hands around the world. Money transfers and information about bank user demographics seems to be unrelated until it is acquired on a massive scale. This amount of financial information contained various facts about the 7/7

London Train bombings, and caused researchers to ponder the implication of analyzing the financial information of the terrorists in order to find identifying factors (Levitt and Dubner 2009).

A correlation was found between a variety of factors and people who may be involved in radical Islamic circles. A few of these factors include the time of cash withdrawals from automatic teller machines, the locations where initial deposits came from, the lack of financial activity that matched the use of a normal daily life, and also whether the person had life insurance. Suicide bombers in most cases do not buy life insurance because if a person commits suicide, the life insurance company does not pay out. It is only rational, then, that a potential terrorist would not waste his money. These factors, in addition to a few others that were classified, helped to narrow the number of people in Britain who may be involved with terrorist organizations to an incredibly small number. From this number further evidence was gained and arrests were made (Levitt and Dubner 2009). It seems that the necessity of integrating technology of a variety of systems will help find people who do not conform to the norm and thus be potential terrorists or criminals. The integration of systems, or decentralization of various divisions and banks, allowed for these people to be identified and it is something that should be continued in the future. It is an example of a hybrid organization, going in some ways from centralized to decentralized, that is then able to effectively combat a completely decentralized organization.

### **The Role of Technology**

The influence of technology on the fight against terrorism is clearly apparent. The internet has changed the way people

communicate and plan, and this holds true for terrorists. The critical change that needs to occur is that of understanding. Relationships will be the foundation for future interactions in both the US and overseas, and people will make the difference.

But what specific strategies can the people of the United States, particularly the fighting forces of both the Air Force and the Department of Defense as a whole, use to combat that breed of insurgency known as homegrown terrorism? The apparent obstacles seem insurmountable; the size and scope of the Internet being amongst the greatest.

The Internet began to take form in 1962, with a doctoral thesis that spelled out the type of data management that would later take on the name "packet switching" (National Academy of Engineering). The United States Department of Defense had an involvement in the Internet from this very early stage, with the Defense Advanced Research Project Agency (DARPA) expressing interest in a "galactic" network of computers in that same year (NAE). With the birth of ARPANet following these events, the Internet took on a definition that began to mirror the modern system of interconnected nodes that allow for rapid data transfer.

Today, the Internet has grown to a colossal size. While the size of the World Wide Web is difficult to measure exactly, the CEO of the largest Internet indexing corporation in the world, Google, has estimated that the Internet is comprised of roughly 5 million terabytes of data (McGuigan). Of this data, Google has indexed only about 200 terabytes, or .004 percent (McGuigan).

Of greater importance with regards to the DOD's efforts to catch homegrown terrorists is the size of the Internet in terms of its user base. In 2008, there were over 1 billion distinct Internet users, and 500 million of them constitute "permanent residents" in the cyber realm, which means they use its resources at least once a week (McGuigan). Using this last element of measurement, it is possible to create a better picture of the exact problem that the DOD faces: finding a single person on the Internet is tantamount to tracking an anonymous, highly mobile criminal in a nation almost double the size of the United States (U.S. Census Bureau). Furthermore, the lack of physical traces within the virtual Internet world exacerbates this problem far beyond even that analogy. The elusive nature of the homegrown terrorist finds an incredible safe haven in the surrealistic mazes of clients and hosts that comprise today's Internet.

This fact does not serve to claim that the DOD and the Air Force are without hope in the effort to stop homegrown terrorists - it simply means that the first step is to level the playing field. Already in this article, the ideas of forcing enemy centralization and creating self-decentralization have showcased their prominence in the strategic realm. In order to both validate their respective values and provide plausible tactical applications that fulfill the strategic goal of each, it is necessary to examine these two approaches in further detail.

### **Leveling the Playing Field**

The goal of centralizing the enemy is, most specifically, to fashion from the starfish a more destructible spider. That is, if the DOD possesses the capability to fight a centralized enemy, it may be more effective to create change in a decentralized force rather than in its own organization. In the

open fields of battle, this involves the use of diversions and attractive traps or ambushes - elements that gather the enemy for quick destruction. But what does this approach look like on the Internet?

One form of virtual centralization is very similar to the physical manifestation of such a task and involves creating facades that quite literally attract potential terrorists to the visitation of a particular Internet site. In Montana, a woman named Shannen Rossmiller has taken to posting videos of the beheadings of Westerners in order to draw potential terrorists into the limelight (Harden 1). Her emails and forum postings create a simple rouse that attracts those who may be on the path to acts of terror. While her approach might not fool the most hardened radicals, it is likely to highlight the exact homegrown terrorists that create such a problem in today's world. The following article excerpt explains how her efforts have already had success.

Posing as an al-Qaeda operative, she has helped federal agents set up stings that have netted two Americans -- a Washington state National Guardsman convicted in 2004 of attempted espionage, and a Pennsylvania man who prosecutors say sought to blow up oil installations in the United States. Rossmiller was a key prosecution witness against the Guardsman, who is serving a life sentence, and said she has been told she will be called as a witness in the Pennsylvania case (Harden 1).

Another way of centralizing the enemy is to take advantage of natural hotspots or gathering areas that do not necessarily broadcast any tendency toward terrorist activity or thought. Certainly, online forums and chat pages that contain threads concerning terror-related topics or hate

speech are obvious virtual locales for terrorism to take root. However, the seemingly more innocuous world of Massively-Multiplayer Online Role-Playing Games (MMORPGs) can also foster collective terrorist thought more in-line with the nature of homegrown terrorism. Two popular MMORPGs, *World of Warcraft* and *Second Life*, allow a user to assume the role of a virtual avatar and act out scenarios in a virtual world. Between these two particular games, *Second Life* is most unique in its realism, offering an online world that mirrors the real world ([www.secondlife.com](http://www.secondlife.com)). The online world has over 19 million users ([www.secondlife.com](http://www.secondlife.com)). A recent Gallup poll found that, amongst the Muslim population of the world, only seven percent amount to radical Muslims; this is approximately 1.52 percent of the earth's entire population (Washington AFP). While there is still little demographic data within the world of *Second Life*, if even half of this percentage was reflected within the virtual world, that would amount to about 600,000 online radicals. This assumption may seem overly paranoid, but the following excerpt from an article on IslamOnline.net gives it some credence:

On May 22, 2007, there was an attack on the Australian Broadcasting Corporation's (ABC) offices inside SL [*Second Life*]. It was the first virtual terrorism attack in-world. A group of people dropped a virtual nuclear bomb on ABC's island (virtual place inside SL), leveling it all except for a single communication tower. A group calling themselves the *Second Life Liberation Army* claimed responsibility for the attack. Until recently, those people were only regarded as "geeky teenagers" with too much time on their hands.

But a report on the *Sunday Times* published on August 5, 2007, said that some experts blame this attack on real-life Islamist radicals. Now, all of a sudden, the attack that took place months ago has become important again.

Terrorism experts are worried that "radical figures" may be pursuing terrorism training within the confines of SL. Experts expect that after the dismantling of training camps in Afghanistan, terrorists have gone online to train in virtual worlds. Some experts even think that the attack on ABC was a training or simulation for something the terrorists are preparing in real life (Yahia).

This particular article frames the idea as a bit of an overzealous conjecture, but the type of homegrown terrorism that the United States seeks to combat could find some ties to such a scenario. That is, much like forums and blogs that allow for anonymous hate speech and even treacherous anti-Western plotting, online video games could provide a relatively safe haven for those individuals who would like to express anti-Western ideals consequence-free (or, at the least, exercise an open curiosity related to terrorist activities). Therefore, it is worth the consideration to investigate the user base of these virtual worlds and their potential nature as breeding grounds of homegrown terrorism.

### **Potential Air Force Contributions**

Such investigation and, in the case of the previous example of subversive rouse, requires a group of dedicated individuals within the existing government defense infrastructure that could act as online deceivers to create centralization or as patrollers in naturally centralized virtual regions. The US Air Force has the long-

standing reputation of being the most technologically advanced branch of the national military force, and they may already have just such an infrastructure.

Air Force "Cyber Command," or the 24th Air Force, became fully active on 26 January 2010, with the explicit mission of the defense and operation of the Air Force's network infrastructure (Cheek). The exact details of this mission are, for good reason, a bit veiled, but the potential for a cyber task force that fits the mold for the aforementioned tasks is clearly present in this new MAJCOM. A full force of "cyber warriors," capable of acting in the virtual world as forward-deployed troops do in the hills of Afghanistan, could seek out terrorists where they gather, or lure them out of their hiding spots. The immediate differences involve only the non-lethality of online actions against terrorism and the virtual goal of capture rather than instantaneous eradication. With these differences in mind, the Air Force could employ its own forces to do what Shannon Rossmiller is already doing, and, furthermore, search virtual, naturally-occurring "hotspots" for would-be homegrown terrorists.

Yet these are not the only two ways that the DOD, or the Air Force in particular, might centralize enemies of the state. So far, the proposed methods for such a task involve an almost literal gathering of anti-Western radicals. However, there is also the possibility of merely diminishing apparent separation through the creation of links or "backdoors" amongst suspect parties. In the real world, this pseudo-centralization takes the form of examining two parties who, perhaps, subscribe to the same newspaper or video delivery service, and then using that common ground to create an artificial tie between the two when no manifest tie exists. Notice that, in this scenario, there is no

literal gathering of the parties or necessity for such a gathering - it is possible to "centralize" these individuals by utilizing information that bonds them to a common group, even one unrelated to terrorism *per se*. Online, this tactic would look more like polling user databases for email services and forum registries. Even if the questionable users are separately active, and especially if their particular interests make it difficult to draw them together even in the virtual world, the collective databases of user accounts and histories can provide useful and centralizing data. This means that an Islamic radical and an American cult member could be linked by a profile heading concerning the overthrow of the United States government, even if more specific details about their differing ideologies keep them from blogging in the same fashion, projecting overly similar messages, or ever visiting the same particular websites. An abundance of email and social networking websites offer users the option of creating public profiles, and the homegrown terrorist is likely to experiment with revealing his/her agenda at least in part through such a venue. The same Air Force "cyber warriors" that could work toward a literal (yet virtual) gathering of suspect individuals could employ this type of strategy to use email and profile databases to link together individuals all over the internet. It is just another way the DOD could begin to level the playing field.

The Air Force is not without options when it comes to playing the decentralized game of the terrorists as well. However, it would require a bit of a different specialization for those who would act in this manner. Or, possibly, it would require a different set of personnel altogether.

The Department of Defense spent over \$306 billion on defense contractors in 2007, and that number grew to over \$377

billion in 2009 (govexec.com). These contractors provide myriad services and products, from fighter jets to bathroom construction. Based on this trend in defense spending, it would not be unreasonable for the government to consider private industries for the purpose of fighting online terrorism. In fact, it would make sense in light of the ~~starfish~~ composition that makes up terrorism both online and abroad. This use of private contractors, perhaps in conjunction with the already burgeoning Air Force Cyber Command, reflects a form of decentralization for the DOD. It removes some of the bureaucratic ~~red~~ tape so often associated with government involvement in any operation, and it redefines the chain of command into something less structured by spreading communication and control to different, less immediately centralized agencies.

The ~~website~~ <http://www.google.com/governmentrequests/> tabulates the number of government requests for user data, or data removal, made to the Internet search engine mogul, Google. The charts on this website showcase how involved certain world governments already are in private databases that reflect different Internet user populations. Furthermore, they showcase the efficiency with which an Internet corporation like Google can locate and provide accurate information on a given user for the purpose of legal prosecution or scrutinous investigation. The requests reflected on the website are often the result of government subpoenas at many levels. However, these data suggest that there is potential for using already-existing infrastructures for the purposes of locating suspect individuals the world over. And, as already highlighted, the use of private industry creates a multi-headed, multi-armed conglomerate organization capable of mirroring the decentralized nature of the homegrown terrorist movement. This beast

can mine multiple sources of data throughout the globe to meet terrorism on its ground and work to eradicate it.

Another option for decentralization again focuses on the echelons within the Air Force's ~~Cyber Warrior~~ ranks. Undercover Police Officers are a common force in the fight against domestic organized crime and the war on drugs (<http://faculty.ncwc.edu/mstevens/205/205lect08a.htm>). In the same way, the Air Force has an opportunity with the upcoming ~~Cyber Warrior~~ force to implement a program that puts its troops undercover in the midst of terrorists – in a virtual sense. The idea is the same: criminals are more open and honest about evil intentions and plans with those with whom they believe they have confidence. Much like the aforementioned centralizing actions of Mrs. Rossmiller, there is the hope that a façade can reveal those involved in terrorist activities. In the case of this scenario, the DOD and the Air Force would seek to decentralize their own forces by making them ~~temporary~~ terrorists across the world in the hopes that their efforts would lead to the incrimination of otherwise anonymous insurgents in the online world.

Specifically, this would resemble a ~~black ops~~ group whose sole jurisdiction is the Internet. Perhaps a specific subclass of the Air Force's ~~Cyber Warriors~~, these undercover operatives could work from the seclusion of their own homes (with the benefits of utilizing private Internet Service Providers, some of which have already been discussed) for periods similar to current ~~real life~~ special operations deployment rotations. Putting these ~~warriors~~ in these ~~deployment~~ scenarios for any meaningful period of time results in similar decentralizing effects to those of utilizing private corporations. That is, it removes the direct chain of command and cuts out some

of the bureaucracy and control elements of direct government oversight. In order for this last point to remain true, it is critical that this new echelon of operatives function as a truly undercover force, maintaining limited involvement with their superiors as they gather data on suspect individuals, only passing immediately necessary information and otherwise waiting until their assignment ends before unveiling their entire collection of knowledge.

In the real world, there is always the concern that undercover officers could “get made” (i.e. their identities would come to light) or, in an effort to retain credibility with their subjects of investigation, practice too many illegal activities. Both of these risks are highly mitigated in the online realm. “Getting made” online does not consist of the same physical threats that it might in the real world, and it may prove easier to fabricate evidence of loyalty with regards to anti-Western ideals in a virtual world. Furthermore, it is not necessary that an online operative actually practice illegal activities against a people in a terroristic fashion in order to appear radical. Rather, that operative need only create an illusionary proof of such activities, perhaps crafting fake news articles or generating doctored photos, etc. While the opportunity for wrongdoing against the West still exists, these factors make it far less likely amongst the ranks of any Special Operations Cyber Warfare group.

The final way in which the United States Armed Forces could seek to root out homegrown terrorism, and perhaps the most complicated, is through changing ideologies. This is uncharted ground within the virtual world. It remains unclear what incentives a homegrown terrorist might find appealing in order to cease anti-Western activities. With some homegrown terrorists there is the hope that open conversation – even on a forum

devoted to anti-Western ideals – might spur some level of tolerance that prevents full radicalization. Because of this truth, any method of destroying online insurgency should keep open the option of engaging with and seeking to moderate would-be terrorists. However, there are still problems associated with this approach. One major issue is the idea that online terrorists are already so difficult to track down; it would be a shame to cease investigation of an individual online based on the assumption that he/she has converted from terroristic activities, only to have him/her resurface later in another location that is more difficult to navigate, wasting more time and resources to seek out the same individual again through virtual means. Therefore, this approach should be implemented with caution.

It would be best for the DOD and the Air Force to focus on the methods of centralizing the enemy and decentralizing their own forces as the primary means of combating online homegrown terrorism. As General George S. Patton once remarked, “A good plan executed now is better than a perfect plan next week.” Therefore, although the approach that seeks to change the ideologies of online terrorists remains somewhat ambiguous in its composition, the Air Force and the DOD should seek to implement the aforementioned tactics as soon as possible. In this manner, the United States can make the most of its cyber-based forces and hope to manipulate and eradicate not only rational state forces that threaten communication infrastructure, but also radicalizing individuals the world over.

It is clear that homegrown terrorism presents somewhat of an undefined threat, and the Internet convolutes the already confusing situation. However, by examining the makeup of terrorist organizations the world over, it is possible to shed some light



on their elusive nature. As decentralized groups of terrorists (especially those that utilize the growing and anonymizing Internet as a front for spreading their messages) act outside of the normal approaches of the centralized government entities that seek to combat them, by either decentralizing its own forces or centralizing the enemy, the United States government – through the DOD and the Air Force – can hope to even the playing field and slow the rate of development of homegrown terrorism. As opportunities present themselves within this strategy, it may become possible to also combat the factors that lead to anti-Western ideologies directly. What remains important at this juncture in history is that the DOD and the Air Force utilize their current cyber-based abilities to seek out and eliminate threats with the virtual world, in the hopes that every possible front for anti-Western terrorism becomes a treacherous path for anyone to tread.

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## **New Forms of Warfare: What's Changing, What's Not, and How Might Military Education Adapt?**

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*An essay for the 14<sup>th</sup> International Seminar in  
Military Science's discussion topic:  
—Form of Warfare in the Post-Cold War Era and  
its Influence on Military History Education—*

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Success in today's security environment requires individuals and organizations to adapt to and anticipate changes in warfare. This is a widely acknowledged imperative, and easier said than done. But it's also only half the challenge that we face. Operators, planners, strategists and educators also make assumptions, deliberately or not, about what is not changing. This essay advocates viewing "form of warfare" in terms of both its changing and unchanging aspects. Change can be interpreted in many dimensions such as temporal, spatial, cyclical, linear, relative, absolute, physical and psychological. Notwithstanding these differences, inquiring about warfare in terms of *what's changing and what's not* seems useful to military educators in at least two ways. First, such questioning impels us to take a fundamental first step to understanding forms of complex warfare. Second, the intellectual process is inherently practical, leading us to consider how to adapt to emerging forms of warfare.

### **What's Changing?**

The push of technological advancement and the pull of new requirements generate new military applications across ground, maritime, air, space and cyberspace domains. Communications and computer revolutions

enable rapidly networked data systems and a COP (Common Operating Picture) for integrating command and control with other functions - C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance). From small arms to ballistic missiles, the use of new technologies tends to increase operational lethality, speed, range, and situational awareness. Remote sensors, stealth drones, automated defense, machine medics and nano-drones are but a few examples of what Peter Singer refers to as a "robots' revolution"<sup>47</sup> where autonomous systems threaten to take humans "out of the loop."<sup>48</sup> Besides increasing the cost of modern warfare, these systems deepen our dependence on them. They also create new vulnerabilities and invite "peacetime" cyber attacks that challenge our definition of "wartime." Some technology advocates see the operational processes of the information age as a shift from finding, fixing and tracking to targeting, engaging and assessing.

Add to these technologies the phenomenon of globalization. Expanding economic ties and social connections raise the stakes that disruptive threats pose to societies. The commercialization of technology enables armed groups and cyber-savvy individuals the prospect of making a worldwide impact. The Iranian state provides an example of increased conventional force capability and ballistic missile and nuclear technology, as well as

<sup>47</sup> Peter Singer, Presentation at USAF Academy, Colorado, 17 March 2009. See Peter Singer, *Wired for War: The Robotics Revolution and Conflict in the 21<sup>st</sup> Century* (New York: The Penguin Press, 2009).

<sup>48</sup> John Boyd's OODA (Observe, Orient, Decide, Act) loop is pertinent here. See Grant T. Hammond, *The Mind of War: John Boyd and American Security* (Washington, D. C.: Smithsonian Books, 2001).

the empowerment of proxy groups (such as Hizbollah) to conduct asymmetric warfare. Next, add increased global and regional competition for scarce resources such as food and water and energy, and the long-term consequences of new forms of warfare become even more significant.

### What's *Not* Changing?

From the perspective of classic military theory, there are human, unchanging aspects of warfare that do not change. Sun Tzu stressed the importance of a full assessment especially knowing one's enemy, the need to shape the perception of the enemy while at the same time becoming unfathomable oneself, staying within one's means with respect to resources, and exhausting the will and ability of the enemy without fighting. If the Master were present today he would likely scrutinize the processes of information age technology to remind us of the importance of the human context, and the necessity to select wise targets for non-kinetic operations, not just kinetic operations. He would likely endorse such readings as David Killcullen's book, The Accidental Guerrilla,<sup>49</sup> because it emphasizes the importance of a detailed assessment (including culture). According to the work of Carl von Clausewitz, the unchanging nature of war also focuses on the human context of war, such as the motives of violence itself, the need to deal with uncertainty even as data increases, and the timeless struggle of commanders to subordinate the goals of war to some sort of reasoned process—what we might refer to today in military doctrinal terms as the ends, ways and means of strategy. The main theme of Colin Gray's book, Modern Strategy, argues the merits of a

Clausewitzian distinction between the unchanging nature of warfare and the changing character of war.<sup>50</sup>

### Complex Warfare

Strategy that is related to military operations must consider this fundamental question about new forms of warfare – what is changing and what is not? Military scholarship and doctrine may be categorized in three ways; types, domains, and methods of warfare. The first category emphasizes the types of warfare, such as transformation,<sup>51</sup> generational warfare,<sup>52</sup> and small wars.<sup>53</sup> Operational domains describe spatial or functional operations such as space and cyberspace,<sup>54</sup> and special

<sup>50</sup> This paper follows this tradition of Colin Gray's interpretation. Colin Gray, Modern Strategy (Oxford: Oxford University Press, 1999). See p. ix.

<sup>51</sup> Martin Van Creveld, The Transformation of War (New York: Free Press, 1991); Rupert Smith, The Utility of Force: The Art of War in the Modern World (New York: Penguin, 2006).

<sup>52</sup> See Thomas X. Hammes, The Sling and the Stone: On War in the 21<sup>st</sup> Century (St Paul, MN: Zenith Press, 2004), and Max G. Manwaring, Street Gangs: The New Urban Insurgency (Carlisle, PA: Strategic Studies Institute of the U.S. Army War College, 2005).

<sup>53</sup> See Max Manwaring, ed., Uncomfortable Wars: Toward a New Paradigm of Low-Intensity Conflict (Boulder: Westview Press, 1991); Max Boot, Savage Wars of Peace: Small Wars and the Rise of American Power (New York: Basic Books, 2003).

<sup>54</sup> See Ben Lambeth, Mastering the Ultimate High Ground: Next Steps in the Military Uses of Space (Santa Monica: RAND, 2003) and Peter Hays, James Smith, Alan Van Tassel, Guy Walsh, eds., Spacepower for a New Millennium: Space and US National Security (New York: McGraw-Hill, 2000) on the question of whether space technologies represent a "revolution in military affairs" or an "enabler" of such a revolution. Gregory Rattray, Strategic Warfare in Cyberspace (Cambridge: MIT Press, 2001), p. 20: "If one conceives of warfare only as events involving violence, then by definition non-violent military means will not be useful in war. In the broader context of understanding the utility of

<sup>49</sup> David Killcullen, The Accidental Guerrilla: Fighting Small Wars in the Midst of a Big One (Oxford: Oxford University Press, 2009).

operations<sup>55</sup> respectively. These arguments tend to advocate current and potential capabilities and outline their possible strategic roles. The final category, methods of warfare, distinguishes among how diverse actors employ their forces, such as unconventional, asymmetrical, irregular, and hybrids thereof.<sup>56</sup> Military doctrine tends to be written at strategic (basic), operational (operations), and tactical (tactics, techniques and procedures) levels in a practical style that combines types, domains and methods of warfare. All of these approaches require us to distinguish constants from variables in complex situations.

A synthesis of opposite tendencies in warfare defines what could simply be referred to as “complex warfare.” This term contains the main tendencies of variation in warfare: multi-layered conflicts among state and/or non-state actors pursuing diverse objectives with traditional and new technologies. The multi-layered aspect

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force, however, the achievement of political objectives may not require the actual use of violent means. The use of non-violent digital attacks to achieve political objectives must be understood as a new form of warfare. Compared to other types of military force, digital warfare represents a type of microforce.”

<sup>55</sup> See William McRaven, *Spec Ops: Case Studies in Special Operations Warfare Theory and Practice* (Novato, California: The Presidio Press, 1996)-propounds “the theory” of special operations, based on a quick and temporary measure of relative superiority that wanes as the operation proceeds; David Tucker and Christopher J. Lamb, *United States Special Operations Forces* (New York: Columbia University Press, 2007)-advocates an organizational separation of special operations into kinetic and non-kinetic commands.

<sup>56</sup> See Brynjar Lia, , *Architect of Global Jihad: The Life of Al Qaeda Strategist Abu Mus‘ab al-Suri* (New York: Hurst & Columbia Univ. Press, 2007; Bard O’Neill, *Insurgency & Terrorism* (Washington, DC: Brassey’s, 1990); Andrew Exum, *Hizballah at War: A Military Assessment* (Washington, DC: The Washington Institute for Near East Policy, December 2006).

describes an array of competitive and cooperative affiliations among many different groups throughout society. Diversity of objectives is also an important feature because the typically assumed basis for alliance, a common threat, is not necessarily valid in complex warfare. Differences in values and interests can be exchanged in a security bargain among transnational and local groups. For military strategists and operators, complex warfare requires an ability to seamlessly plan and synchronize operations involving military forces, police, media, militias, terrorists, ethnic groups, governments, international organizations, businesses, possibly more.

### **How Might Military Education Adapt?**

Sometimes making changes in military education is not that easy to implement, perhaps partly because military members tend to be conservative and academics tend to disagree over what, how and why something may need to be changed. At the same time, military educators tend to recognize the need for change particularly when during ongoing contingency operations.

There are many initiatives throughout the US Department of Defense (DoD) and military services that promote the need to adapt military education. Sponsors of such initiatives visit academies, contributing to dialogues about continuity and change across the curriculum. Examples of policy and practical changes whose impact we often consider include Office of Net Assessment efforts, the Language and Culture Roadmap, centers for Lessons Learned, directorates in Irregular Warfare, and centers for new technology as in Unmanned Aerial Vehicles, and reorganizations. An interesting and perhaps ironic issue with respect to reorganization

given the origin of the US Air Force, is the USAF's placement of its cyberspace assets under Air Force Space Command, in contrast to the establishment of a joint cyberspace command unfettered by subordination to another domain.

The following examples of adjustments in education at the USAF Academy changes that I have observed firsthand. They reflect and support broader initiatives throughout the DoD in four key areas: collaboration and teamwork for enhanced joint, combined and interagency education; assessment of lessons learned; establishment of new activities focused on contemporary forms of warfare; and military deployments in support of Foreign Internal Defense (FID) in Operation Enduring Freedom.

Joint education is one example where we have adjusted our curriculum to focus on a core competency and mindset in any form of warfare. The USAF Academy offers a full semester core course (one that all cadets must take) on Joint Operations, with cadets choosing between a technology-oriented course and a regionally-oriented course. Begun in the 1980s as a singularly joint operations course addressing Air Force, Army, Navy and Marine Corps doctrine and force capabilities, the course refocused on multi-national operations in the 1990s and began force employment exercises. We still struggle to provide joint doctrine in addition to service doctrine. However, the latter is becoming more collaborative itself aided by recent doctrine on stability operations (US Army), counterinsurgency (US Army and Marine Corps), and irregular warfare (US Air Force). Since 2001, we have brought an inter-agency perspective to this course. In a related effort last year, we adopted one of the USAF Academy's 21 institutional learning outcomes, that of "Teamwork," as a

course goal. Most recently, the cadet choice of technology or regions allows a degree of specialization motivated by personal interest. As you might expect, *what do we take out?* and *how do we integrate more material in the course?* are recurring questions.

The second example addresses our concern, *how do we assess what cadets learn, rather than assess only what instructors teach?* The GOAL (Guiding Outcomes Assessed Learning) is a basic tool instructors use to assess classroom learning after each lesson. Three areas are considered: what your students...needed to learn (extracted from the lesson objectives); what your student did learn and how you determined that they learned; any instructor ideas for improvements; and the instructor's rating of the lesson (a letter grade that judges how well the students learned that lesson). Each lesson has learning objectives, and the process takes about five minutes of reflection after each class.



Example number three is a new course on Asymmetric Warfare, the first time we have given cadets the responsibility of developing a proposed course. By selecting the right cadets, we are seeing a syllabus that is more compelling to more cadets which should enhance learning. Our desire to try this experiment arose from a semiannual department faculty development seminar that raised the following question: *how many times have you assigned an*

*important reading and then taught what you thought was your best lesson plan, only to notice that most cadets are not that interested?*

Finally, we are involved in developing the content of Academy education in Kabul, a Foreign Internal Defense (FID) mission in Afghanistan. According to our doctrine on joint operations, FID programs encompass the diplomatic, economic, informational, and military support provided to another nation to assist its fight against subversion, lawlessness, and insurgency. In the past, military FID has mainly involved special operations forces in operational assistance and collaborative planning. Today, in order to anticipate, preclude and counter the array of threats, FID is also being conducted by general purpose forces. So, in coordination with faculty from the US Military Academy at West Point, USAF Academy faculty serve as curriculum mentors and partners at the National Military Academy of Afghanistan (NMAA).

This mission is under the Combined Security Transition Command-Afghanistan, which replaced Combined Forces Command to transition security capability and responsibility from coalition forces to Afghan forces. The four-year curriculum at NMAA is tailored to local needs for complex warfare, including: military leadership under civilian authority and a national constitution; domestic defense rather than external force projection; an Army Air Corps rather than an independent Air Force. The broad curriculum is ambitious, but necessary due to the Taliban's intellectual devastation of the Afghan educational system.

## Concluding Thoughts

The rigor and relevance of military education are critical components of professional success. Developing the judgment to succeed in contemporary and emerging forms of warfare is arguably the *sine qua non* of an Academy education. Facing variants of complex warfare, military educators also deal with a fundamental question of strategy as we develop, teach, and assess our curriculum -- what is changing and what is not? This approach recognizes the value of a Clausewitzian view of "complex warfare" as a holistic phenomenon of *essential* (an enduring nature) and *per accidens* (changing character) elements. There are other valid ways to consider the question of "form of warfare and its impact on military history education." At this gathering of military educational institutions throughout Asia and the Pacific (the International Seminar in Military Science), we have a unique opportunity to gain a better understanding of various perspectives on this important topic.

**“Ancient Alexandria, Alexander, and  
History:  
The Relevance of Thought in the  
Contemporary Strategic Environment”**

By Lt Col Steve Pomeroy, USAFA

Speaking Comments for the  
27<sup>th</sup> Annual Colorado All-Service Academy  
Ball

28 December 2009

Good evening distinguished guests, honored alumni, cadets, families, organizers, Broadmoor staff, and all who join this evening's festivities. I am indeed humbled to speak in your presence. Tonight I shall attempt to pass a legacy of human thought, a legacy of thousands of years of which you and your profession bear full membership. Our tale begins tonight not in the mountains of contemporary Colorado, Afghanistan, or the flats of Iraq, but in the ancient city of Alexandria, Egypt.

In the third century before the Common Era, Alexandria was one of the great hubs of the Western World; indeed, it helped make the Western World. Alexandria was a magnificent seaport in which arriving ships were searched, not for contraband but for books. The books were borrowed, copied laboriously by hand, and returned to their owners. The copies numbered in the half millions, and were emplaced within the city's great library and made available to the city's residents, which was the first place in which Westerners collected systematically the knowledge of the world. Therein lived a man named Eratosthenes, who one of his envious rivals described as “Beta” because, he said, Eratosthenes was second best in everything. As the late astronomer Carl Sagan eloquently described, Eratosthenes was clearly “Alpha,” an historian, astronomer,

geographer, philosopher, and more. The titles emergent from his hand ranged from *Astronomy* to *On Freedom From Pain*. He directed one of the wonders of the ancient world, a true research center, the Library of Alexandria, wherein one day he read that on the longest day of the year at the southern city of Syene, at noon, vertical sticks or temple columns cast no shadow. The Sun was directly overhead.

Eratosthenes asked why on June twenty-first, at the same moment, sticks in Syene cast no shadow and sticks in Alexandria, far to the north, did. The only possible answer, he saw, was that the surface of the Earth is curved. Not only that: the greater the curvature, the greater the difference in the shadow lengths. The Sun is so far away that its rays are parallel when they reach the Earth. Sticks placed at different angles to the Sun's rays cast shadows of different lengths. For the observed difference in the shadow lengths, the distance between Alexandria and Syene had to be about seven degrees along the surface of the Earth; that is, if you imagine the sticks extending down to the center of the Earth, they would there intersect at an angle of seven degrees. Now, seven degrees is something like one-fiftieth of three hundred and sixty degrees, the full circumference of the Earth. Eratosthenes knew the distance between Alexandria and Syene was approximately 800 kilometers, because he hired a man to pace it out. Eight hundred kilometers times fifty is 40,000 kilometers: so that must be the circumference of the Earth.

This is the right answer. His only tools were sticks, eyes, feet, and brains, plus a taste for experiment. With them, he deduced the circumference of the Earth with an error of only a few percent, a remarkable achievement for two-thousand, two hundred years ago. In many ways, his ruminations



not only shaped the world, they made the world. How so?

In its glory, Alexandria was a remarkable place. Founded by Alexander the Great and constructed by his former bodyguard, Alexander and his kingly descendants encouraged respect for other cultures and the open-minded pursuit of knowledge. He encouraged his generals and soldiers to marry Persian and Indian women. He respected the gods of other nations. He collected exotic life-forms from around the planet as well as the knowledge of various academic and physical disciplines. He sought to understand the world as it was, not as he wished it to be. His tutor was Aristotle. A thoroughly military officer, Alexander saw no discontinuity between service and synthetic or analytical and critical thought. To him, knowledge of the world, a broadly humanistic education, was as natural as wielding his sword. During the Hellenistic Age, Eratosthene's idea was tested and commonly accepted. Following the fall of classical civilization, you may remember, Western Europe did not accept such an idea until the sixteenth-century of our Common Era, and even then, the idea was viciously opposed on many grounds, as some still do today. What then does this tale demonstrate? It shows, I contend, that despite certain strands of our popular conventional wisdom, militaries have often been---and forgive the use of the following word---progressive organizations. But, such a state of affairs is neither birthright nor a given.

The argument here is that education, reflection, and the synthesis of knowledge about our world, peoples, and universe is fully compatible with military service. To understand one's strategic environment, one must reflect upon and understand its people, anthropology, history, music, art, communications, technology, science,

philosophy, religion, politics, and interactions of regions through the ages. This expertise is not something that can be conjured instantly. It will not necessarily agree with our preconceptions. As a scholar and historian of technology, I must here reveal a bias. There exist common themes throughout world history that an astute observer may draw upon for intuition. Notice that I said intuition, for understanding humanity is not a predictive science, despite what some would say. It is an art as complementary as Clausewitz is to Sun Tzu. The crux of the aforementioned disciplines depends upon translating human thought into action. History is therefore not worth learning as some would say, ~~to~~ avoid repeating the mistakes of the past." The past does not blindly repeat in the fashion of recorded tape. Human agency prohibits such a predictive instrument. It is difficult enough to predict what you will eat for breakfast on Thursday, let alone estimate the actions of battlefield opponents

Of what use then is the record of human thought? History is the interpretation of the record of human thought and activity. This is why it changes. The people who write it change. Those who mockingly ask, ~~what's~~ "what's new in history?" simply do not understand the discipline. Robin George Collingwood, an historian and philosopher of his discipline, considered history an engaged reenactment of earlier thought expressed such that the interpretation could be openly debated and thus bringing scientific rigor to the enterprise. Those of you familiar with war will recognize the applicability of his method:

First, the thought must be expressed: either in what we call language, or in one of the many other forms of expressive activity.

Secondly, the historian must be able to think over again for herself or himself the thought whose expression he is trying to interpret.... The important point here is that the historian of a thought must think for himself or herself that very same thought, not another like it.

And so he reached his third proposition: Historical knowledge is the re-enactment of a past thought encapsulated in a context of present thoughts which, by contradicting it, confine it to a plane different from theirs

Although there may be similarities between ages and events within the course of human events, the essential acts comprising history and all of human activity making it so appealing to us result from conscious and unconscious human thought. In an endeavor as complicated as the application of military power, it is therefore the understanding of human thought that is critical. By knowing your own thoughts, you learn the thoughts of others, and by learning to perceive the world through the eyes of others, you learn better your thoughts. Sometimes you will not like the revelations, but no matter the implications for objectives, strategies, and actions, you must possess the integrity of thought and character to face willingly the conclusions you deduce and induce.

These are not easy tasks. Your forthcoming challenges upon commissioning are such the demands of deployment, daily operations, and technical training to develop tactical and later operational and strategic proficiency are simply all consuming. But to be great as an

Alexander, and even Alexander made mistakes, you cannot afford neglecting the reflective time to understand your universe, world, and place therein. One can become very good as an officer without contemplating such things or developing a philosophy of service, but you cannot become great. Doing so requires finding a passion to light the fires of your mind, not filling it as if it were a vessel. To make your service to the nation significant, you must continue to develop your minds and passions, for it is these things permitting one to make a difference for the better. Our short journey tonight has taken us from ancient Alexandria to interpreting the Cosmos of human thought. Why? I assert to you that the strength of a free people comes from their education. For it is through education they learn to ask courageous questions and to answer them with depth. As productive members of our Republic, it is up to you to ask questions of courage and answer them with sufficient depth.

From these serious thoughts, now let us turn our attention to the camaraderie and fellowship promised for this evening. With best wishes for your service, health, peace, prosperity, and happiness, I bid you goodnight and good service.